NSPB ANNUAL CONFERENCE IN NEW YORK

At the three-day April meeting a year's advances were reviewed and new attacks were planned in the crusade to save sight

AS IN previous years the Summer issue of *Sight-Saving Review* is largely devoted to papers presented at the Annual Conference of the National Society for the Prevention of Blindness. The three-day meeting was held this year at the Barbizon-Plaza Hotel in New York, April 12–14. In attendance were approximately 400 delegates from 31 states, the District of Columbia, Canada, and Great Britain, representing the fields of medicine, public health, industry and education.

Progress and Current Problems

"Our One Purpose—Saving Sight" was the conference theme, and the discussions brought out many evidences of progress toward this goal. The principal areas under consideration were vision problems of the aging; the value of low vision aids; advances in industrial vision conservation; review of current scientific knowledge of eye diseases and treatment; guidance and counseling of partially seeing children; and building a public relations program in the community for prevention of blindness.

Welcoming the delegates on the opening day, Enos Curtin, president of the National Society, expressed the hope that the meeting would provide "a storehouse of sight-saving information to last throughout the year." He reported that the past twelve months had shown significant advances in the Society's program, and cited such important additions as the low vision aids service, and the Junior Wise Owl Club.

"We have enlisted a full complement of professional staff members," he said, "the first full crew we have had in some time; and we are steadily building volunteer prevention of blindness divisions across the country."

Message from Bob Hope

Mr. Curtin read a telegram from Bob Hope, national chairman of the 1961 Sight-Saving Campaign, expressing his good wishes and the conviction that, "We know the needs, and we know what must be done. The challenge is now before us and I am pleased to join you in this most necessary and important job of saving sight."

"Health as a Tool of Diplomacy" was the subject of an important address by Eugene J. Taylor, of the editorial staff of the *New York Times*, at the conference luncheon on April 14. On this occasion Mildred R. Moon of Gary, Indiana received from President Curtin the national Winifred Hathaway Award as Teacher of the Year for the Partially Seeing. Details of the presentation appear elsewhere in this issue.

Preceding the conference two days were devoted to meetings of executives and board members of state divisions of the National Society under the chairmanship of Dr. John W. Ferree, executive director.

CURRENT STATUS OF UVEITIS

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Much investigation is under way to discover basic mechanisms at work in the production of this disease.*

IT IS estimated that uveitis causes somewhere between 10 and 15 per cent of all blindness in the United States. The largest eye hospital in the country, Wills Hospital in Philadelphia, with which I am associated, reports that 15 per cent of its admissions are for the study and treatment of this disease.

We ophthalmologists see a great number of patients who come in only for a routine eye examination and who show signs of an active or past attack of uveitis. Many cases of so-called senile cataract in relatively young people are really complicated cataract resulting from uveitis that may flare up postoperatively and even lead to complete loss of the eye.

Uveitis is defined as inflammation, without pus formation, of some part or all of the uveal tract, which comprises the iris, ciliary body and choroid. The symptoms vary from none at all to severe discomfort and complete loss of vision. The most common complaints are some blurring of vision or spots before the eyes. Pain in and around the eyes is frequent. Sensitivity to light and tearing may also occur.

The diagnosis of uveitis is suggested by inflammation in the white of the eye around the cornea. More definite evidence derives from finding inflammatory precipitates on the back of the cornea, turbidity of the usually clear intraocular fluids, deformity of the pupil from adhesion formation, and inflammatory changes in the eye-grounds. To clinch the diagnosis it may be necessary to use the slit lamp microscope, the gonioscope, and the direct and indirect ophthalmoscopes.

Some authorities claim that uveitis can be classified in two groups: the granulomatous and the nongranulomatous. The former runs a chronic progressive course with much tissue damage, and heals with scar formation. The nongranulomatous cases start abruptly and intensely, run a self-limited course, produce little or no tissue damage and tend to recur.

Other experts classify their cases as acute or chronic and add the part of the uveal tract involved, e.g. acute iritis, chronic choroiditis.

The causes of uveitis are plentiful but in a discouragingly great number of instances no definite cause can be established. About 60 per cent of our cases are chronic or granulomatous and about half of these are due to toxoplasmosis, a protozoan parasite.

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 13, 1961.

A small percentage is caused by tuberculosis, less by sarcoidosis, and still less by syphilis. New causes for this group are constantly cropping up; a few years ago amoebic dysentery infection was incriminated and more recently a fungus infection, histoplasmosis, has been viewed with suspicion.

The remaining 40 per cent of our cases are classified as acute or nongranulomatous. There is much evidence that this type of uveitis is really an allergic reaction to hemolytic streptococcal infection elsewhere, as in the teeth, tonsils, and sinuses.

It is thus apparent that it is necessary to subject a patient with uveitis to an extensive battery of diagnostic tests for many systemic diseases. In this quest we often enlist the services of other specialists such as the internist, rhinologist and dentist.

Types of Treatment

The local treatment of uveitis consists of warm applications for relief of discomfort, cortisone preparations to reduce inflammation in the anterior segments of the eye, and pupil dilating drugs such as atropine and homatropine to prevent adhesions in the area of the pupil that may in turn lead to secondary glaucoma and cataract formation. At times surgery is needed to open the pupil, remove a complicating cataract, reduce intraocular pressure or repair a retinal detachment.

The systemic treatment of uveitis includes the use of analgesics, and narcotics for relief of pain, antibiotics, sulfonamides or specific anti-infective drugs where the indication is present, and cortisone preparations for the general reduction of inflammation. Specific vaccines and surgical eradication of foci of infection are often advised, particularly in the nongranulomatous cases. Nonspecific foreign protein injections and artificial fever are also utilized.

Current Research

At present much investigation is under way to elucidate the basic mechanisms at work in the production of this disease. In experimental uveitis we have demonstrated the formation of antibodies in the uveal tract itself. Much work has yet to be accomplished in correlating uveal responses to different types of antigen-antibody reactions. A great aid in such studies is the application of newer immuno-histochemical techniques, such as the fluorescent-antibody method.

It may even be that we are entirely wrong in pursuing infectious agents as the cause of uveitis. For instance, we have recently started to do blood serum complement fixation tests against uveal pigment and we find significantly more positive tests in the presence of uveitis than in its absence. This would suggest that uveitis may be an auto-immune disease in which the eye responds with antibody production to its own, perhaps slightly altered, uveal tissues. A similar mechanism is claimed to play a role in acquired hemolytic anemia, disseminated lupus erythematosus, rheumatic fever, acute glomerulonephritis and many other diseases of hitherto unexplained etiology.

This, then, is the picture of uveitis as we can draw it at the present time. It cannot be presented as static, but rather as a dynamic panorama encompassing many allied fields of medical science and ever moving in the direction of better classification, prevention and management.

CORNEAL PRESERVATION

Review of Methods

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Dehydration and vacuum storage techniques are making it possible to keep corneal tissue successfully over long periods.*

MANY methods for the preservation of corneal tissue have been reported in the literature. Among them are procedures varying from formaldehyde fixation to deep freeze techniques. Whole eyes have been stored in blood, plasma, vegetable oils, various physiologic solutions, and plasma substitutes. Excised corneas have been stored in moist chambers, air and mineral oils.

In the past there have been arguments for and against viability of corneal tissue as a prerequisite for transplantation, and consequently a criterion for tissue preservation has not yet been firmly established. However, the only true criterion must be the ultimate state of the grafted cornea or the clinical results obtained.

I will limit this discussion of corneal preservation to the more recent findings. The best clinical results with penetrating transplants are now obtained when fresh donor material is used. The current method employed by many eye banks for preserving donor material to be used for both full and partial thickness grafts is storage of the intact eye in a moist chamber at 4°C for no longer than 72 hours.

Dehydration in Glycerine

Drs. McNair and King, after Eastcott's work, thought that the process of treating cornea with a glycerine-saline mixture and freezing it to −79°C could be carried a step further by drying the tissue in a vacuum. It was thought at the time that glycerine was responsible for the success of storage and not low temperatures. Subsequently Dr. King devised a method whereby he suspended animal corneas in 95 per cent glycerine, then dehydrated them and sealed them in a vacuum container. This was kept at room temperature and the corneas remained clear for as long as they were stored. They were rehydrated and used for grafting one week to nine months later. Dr. King found that all partial thickness grafts were clinically successful. Poor results were obtained when the stored corneas were used for full-thickness grafts.

It was concluded that corneas dehydrated in glycerine and used for partial-thickness grafts were suitable for animal keratoplasty. Dr. King then applied this procedure to human corneas making sure that they were

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 13, 1961.

obtained soon after death. The clinical results were good. Five human corneas stored up to two months were used successfully. This method was then recommended for partial-thickness transplants upon humans.

In another study Dr. King reported on the use of the described method of corneal preservation for lamellar graftings in over 50 patients. Corneas were stored up to two years at room temperature and results were generally good. It was also pointed out that preserved stored corneas may be preferable to fresh in certain diseased states due to a possible lessening of an immunological response.

Stocker and collaborators demonstrated with their tissue cultures that corneas suspended in 100 per cent glycerine at room temperature showed no growth, indicating that those cells were not viable at the time of transplantation. Thus viability is not a prerequisite for successful clinical results in lamellar or partial-thickness transplants.

Lyophilization Technique

Clinical success with corneas preserved by lyophilization and subsequently used in lamellar transplantation was reported by Payrau *et al* in 1958. It was claimed that results compared favorably to those obtained with fresh tissue. Their procedure involved the removal of the liquid contents of the eye. The whole eye was then quick frozen to −79°C. It was maintained at −50°C and put under vacuum for 18 to 20 hours, thus removing approximately 75 per cent of the tissue fluids; then sealed in nitrogen and stored at room temperature until used. The eye was then suspended in normal saline for one to one and a half hours which resulted in reconstitution of nearly normal physical and histologic appearance. It is quite evident from this abbreviated description of the procedure that tissue culture and Warburg studies have proved negative, again giving evidence that nonviable donor cornea can be used successfully for partial-thickness transplants.

Eastcott reported successful clinical results with both lamellar and full-thickness corneal transplants. His method was to suspend corneas in Ringer's solution containing 15 per cent glycerine for one hour at room temperature and then to quick-freeze to −79°C. Before use the corneas were thawed quickly and appeared normal. All partial thickness grafts performed with tissue stored in this way were successful. It was concluded that the ultimate clinical results were comparable to those obtained with fresh corneal material, and that corneas could be stored almost indefinitely. On the other hand success with full-thickness grafts was very limited.

Dr. Stocker and collaborators obtained positive tissue cultures with glycerol-treated corneas stored at −79°C. However, the frequency of positive cultures was greater when they were stored at −45°C. It was noted that at the higher temperature corneas stored in 20 per cent glycerol and 80 per cent Hawk's balanced salt solution gave the most satisfactory tissue culture results. Positive cultures from all three cellular layers that make up the cornea were obtained when stored for as long as 19 weeks when Stocker's method was employed. Thus it would appear that for the maintenance of viability of corneal cells temperatures should not be lower than

−45°C, and indications are that the longer the period of storage the fewer the number of successful grafts.

Viability of Endothelial Cells

In another study by the same investigators correlations were made between the behavior of fresh and frozen stored corneas in tissue culture and in their post-operative course. It was determined that the viable state of the endothelial cell layer of the cornea is largely responsible for the clarity of the graft immediately after surgery. We can therefore understand why Eastcott's method of corneal storage for full-thickness transplants was not very successful. Tissue cultures showed limited endothelial growth when stored at −45°C and virtually none at −79°C, although positive cultures were obtained both for stromal and epithelial cells. It then would appear that viability of the endothelial cells is in some way responsible for the ultimate clinical state of the graft. Corneal tissue preserved in the glycerol-Hawk's solution and stored at −45°C was not recommended for routine human use; however, it would suffice in emergencies if no fresh tissue were available.

Let me interject a note of caution here regarding the viable state of endothelial cells. The results obtained by Stocker do not necessarily indicate that viability of these cells, when other preservatives are used, is a prerequisite for clinical success. I emphasize this because the fate and function of donor endothelial cells are not yet clear. If endothelial damage occurs in fresh donor corneas during or prior to surgery it would lead to increased permeability or penetrance of aqueous humor and/or some possible impairment of a dehydration mechanism that occurs across the endothelium. This leads to hydration and possible permanent opaqueness of the graft. If the endothelium is replaced soon after surgery and its function is a passive one in respect to permeability, then it is conceivable that a proper preservative may maintain its structural integrity and quality of adhesion to Descemet's membrane. In such a case viability may not be a prerequisite for successful clinical results.

It should be noted here that Stocker obtained positive tissue cultures for endothelium after 19 weeks of storage and his ultimate clinical results were poor (one clear graft out of nine.) Thus it would appear that quantitative studies should be made of the viable endothelium cells present after storage; also of the effect that freezing and particularly thawing have upon the adhesive qualities of these cells with respect to each other and to Descemet's membrane. It is evident that ice crystals will damage and devitalize a good percentage of the cellular components of the cornea, particularly the endothelium.

Criterion is Maintenance of Structure

Three successful methods for partial-thickness grafts have been presented, namely: glycerol dehydration, lyophilization and glycerol freezing. In each case it is clearly indicated that a criterion for clinical success is not viability of the stored cornea, but rather the maintenance of structure. Consequently, due to a lessened immunological response because of avascularity of cornea and to the relatively small amount of tissue transplanted in lamellar grafting, there is increased possibility of using proper animal

donor material for transplants on humans.

One of the preservation methods should be adopted by eye banks for long-term storage of corneas for lamellar keratoplasty. The most convenient, simple and least expensive procedure is that of Dr. King. Its successful application to humans has been demonstrated, and it is imperative that a sufficient supply of human corneas be available for all emergencies, including a national one, when fresh material is non-existent.

Rare ultimate clinical successes in full-thickness grafts are obtained through use of corneas stored for long terms with some preservatives. However, it is evident that glycerol-freezing is a most promising procedure and slight modifications will be necessary to insure future success. Its application will be extended to other tissues and organs where viability of the cellular constituents is essential, such as glandular tissues, when the immunological response could be controlled.

At present there are methods of short-term storage of corneas for full-thickness grafts, namely, liquid paraffin and polyvinylpyrolidone (PVP). Currently, the criterion commonly used by ophthalmologists for donor cornea other than clinical results, is the gross appearance, and the degree of transparency of donor material stored in a moist chamber at 4°C. Untreated corneas stored in a moist chamber soon exhibit an increase in thickness due to edema with subsequent loss of transparency, marked increase in folding of the membrane of Descemet, and haziness. It is known that in vivo corneas have a constant tendency to absorb water from their surrounding fluids. This is opposed by dehydrating mechanisms which cease to function at death and result in an opaque cornea. The criterion utilizing swelling properties of the cornea must then be intimately connected with the physiology of corneal hydration and deturgescence.

The processes which play a role in the maintenance of deturgescence and other physiologic properties have been demonstrated. An increase in hydration consists essentially of the absorption of aqueous humor. Its rate will be determined by the permeability of the endothelium to salts and water, in addition to the efficiency of the active transport mechanism that opposes this uptake. Upon cooling the eye, as in the moist chamber technique, two opposing effects on the active transport system will be manifested: the lowering of permeability rates which in turn will reduce the rate of hydration, and a decrease in the rate of metabolism which will reduce the efficiency of the active transport system and results in hydration, as was demonstrated by Davson. Thus by decreasing the rate of metabolism by lowering temperature and preventing, to some degree, hydration (as does paraffin and PVP) the cornea, when transplanted, is better able to cope with hydrational changes that may occur in its new environment.

Short-Term Storage

In order to insure use of all corneas, particularly when eyes are received during week-ends, techniques for short-term storage for full-thickness transplants should be employed. The PVP method involves the aspiration of the aqueous humor with a 26-gauge needle. Entry is made through the

limbus and into the anterior chamber. After the aqueous humor is aspirated the chambers are filled with 10 per cent aqueous PVP (K-60). The eyes are washed in Neosporin solution and stored at 4°C in a moist chamber which is filled with PVP. The PVP level is up to about the limbus of the eye. It has been noted that after 12 days of storage water uptake of non-treated corneas was 12.6 per cent as compared to a 4.7 per cent uptake for treated eyes. Histologically there is a maintenance of the structural integrity of the stroma and endothelium. Human corneas stored for 12 days did not appear to be structurally different from non-treated corneas stored for 48 to 72 hours. Metabolic activity was demonstrated to be greater in preserved eyes than in non-treated cornea when respiration studies were made. However, it should be noted that respiration is more an indication of the function of various enzyme systems than it is of the integrity of cells. Results of the corneal grafting procedures indicate approximately 15 per cent more clear transplants six weeks after surgery with preserved corneas than with non-treated corneas stored for 12 days.

The paraffin technique involves the suspension of whole eyes or corneal discs in liquid paraffin and storage at 4°C. Rycroft obtained successful clinical results with corneas stored in mineral oil for as long as three weeks, although most surgeons prefer to use corneas that have been stored no longer than one to two weeks.

Because of the widespread application and success of the paraffin technique, it appears to be preferable to the PVP method. Consequently this method has immediate application at eye banks for eyes received during week-ends.

Summary

Methods for corneal storage have been presented. Corneas may be stored for almost an indefinite period of time when used for partial-thickness transplants. Viability of donor cornea is not a criterion for clinical success for partial-thickness transplants. Methods of corneal storage for full-thickness transplants as yet have not proved successful. Present evidence indicates that the viable state of the donor cornea, particularly the endothelium, is largely responsible for its remaining clear after transplantation. It is evident that glycerol-freezing is a most promising procedure to fulfill this prerequisite, and slight modifications will be necessary to insure future success.

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DR. WEISENHEIMER JOINS NATIONAL SOCIETY STAFF

Frederic S. Weisenheimer, Ed.D., a specialist in health and social welfare programming, and former associate director of the California Heart Association, has been appointed director of field services of the National Society for the Prevention of Blindness. He joined the staff on May 15.

In directing the Society's field activities Dr. Weisenheimer will coordinate program services for the state and local divisions. He will be responsible for state and local organization, recruitment and consultant services for community program development, training of state staff personnel, and preparation of program materials.

A resident of Mill Valley, California before moving to New York City, Dr. Weisenheimer joined the California Heart Association as program director in 1954, with responsibility for developing and supervising health education in that state. He became associate director of the organization in 1960.

Prior to his Heart Association posts he served for 14 years in the California area with the American National Red Cross, rising from a wartime field directorship in Los Angeles to regional director for the state. He has also been a social service supervisor for the California State Relief Administration.

Dr. Weisenheimer is a graduate of the University of Southern California and received his Doctorate of Education degree from the University of California. He is a former chairman of the Health Division of the California Conference on Social Welfare, a past president of the California Committee for Adult Education, and was a member of the steering committee of the Governor's Conference on Rehabilitation in 1957.

Dr. Weisenheimer is married and the father of a married daughter who resides in Mill Valley.

NIGHT VISION RESEARCH

The subcommittee of the Night Visibility Committee of the National Academy of Science has issued a report listing suggested research projects aimed at reducing the accident toll in night driving, according to the *Journal of the American Optometric Association*.

The Committee lists two approaches to the problem—basic research and engineering—starting with the accidents and seeking to discover what limitations of visibility could have been involved in their causation.

As previously reported, the American Optometric Foundation has undertaken a three-year night vision research program at Indiana University.

The Fall issue of *Sight-Saving Review* will feature additional papers that were presented at the NSPB Annual Conference in New York, April 12–14.

EYES IN PROTECTIVE CUSTODY

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Safety lenses are no longer worn only in industry but are prescribed as protection against the everyday eye hazards to which most people, including children, are exposed.*

WHENEVER an ophthalmologist is entrusted with the custody of a patient's eyes there is obligation not only of treatment and prescription, but also of protection. This obligation has been well recognized in industry which is responsible for protective visual planning and safety eyewear.

However, the do-it-yourself craftsman, the active hobbyist and the majority of average spectacle wearers are generally neglected in this regard. Misdirected fishing weights, flying nails, projectiles from rotary lawn mowers, falls, automobile collisions, and similar accidents, recurrently thought of as "freak," exact a needless toll of lacerated and lost eyes. This toll can be greatly reduced by thinking of protection whenever spectacles are prescribed. Commonplace glass lenses —especially in minus strengths—become vicious secondary missiles when fractured. They can be converted to protective shields by using safety materials.

Widespread attention to the protective factor will not only save many eyes but will avoid needless morbidity. There is the added advantage of reduced inconvenience and expense of rush replacement when an individual breaks his only pair of spectacles.

Present day safety lens materials may be classified as follows: (1) laminated glass; (2) heat toughened or tempered glass; and (3) organic plastics.

Laminated Lenses

Laminated lenses (e.g. Triplex, Motex) have been less popular in America than in Britain. Though their resistance to perforation is much greater than that of crown glass, they fracture at essentially the same impact required to break crown lenses and small secondary missiles may fly from the inner lamina when the lens is fractured by non-penetrating blows. Replacement of laminated lenses will be more frequent than with the other classes of safety materials, because fractures may occur in either or both lamina even though adequate eye protection has been maintained.

Heat Treated Lenses

Heat treated lenses have become very popular because they may be prepared from readily available lens blanks, and compact equipment for this work is easily operated in any optical shop. Widespread use of these

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 13, 1961.

lenses has been standardized for industry by the American Standard Safety Code for Head, Eye, and Respiratory Protection, Z2.1–1959.

Though these standards center on thicker and therefore slightly heavier lenses, their principles are adaptable to thinner lenses with significant increase in protection over the conventional type. Individuals who have a definite objection to the industrial type (Super-armorplate, Bal-safe, Savotex, etc.) for dress wear may be given much added security with tempered semi-ophthalmic thickness lenses of 1.8 to 2 mm. minimum thickness (Tempross, Safe-rex, Tuffrx). Actually the difference in weight is small and many people wear standard industrial type lenses both on and off the job. Corrected curve lens blanks are available in prescription ranges for either the 3 mm. minimum specifications or semi-ophthalmic thickness needs.

The National Society for the Prevention of Blindness has on record more than 22,000 American workers who have had the sight in one or both eyes saved by safety lenses. They are members of the Wise Owl Club and the recently activated Junior Wise Owl Club, both sponsored nationally by the Society.

Method of Heat Treating

Heat treating is done after surfacing and polishing are completed. Polishing requirements must be particularly high, because fracture systems generally start in surface flaws. Any glass is inherently stronger when perfectly polished and free of such flaws. The general principle of thermal toughening is to warm the lens to a temperature just below its softening point and then rapidly quench it by cold air blasts on both surfaces. This creates surface condensation or fixed compression in which glass becomes very strong. The inner core then cools slowly and creates radial tensions against the surface layer, similar to that of bicycle spokes against the wheel's rim. Properly balanced compression-tension systems will increase impact resistance three- to seven-fold and are essentially as enduring as the lens itself. The system is not weakened by blows which fail to rupture the lens but may show some spontaneous loss of strength after 15 years.

The pattern (birefringence) of strain within tempered glass is easily seen by placing the lens between two sheets of Polaroid having their axes at 90° to each other. Any common light source is adequate. Isochromic lines indicate the location of uniform stress values. Isoclinic or dark lines of light extinction are seen where the principal axes of stress are parallel to the axes of the polarizing film. These lines should appear balanced, radial and generally symmetrical. The thinner the isoclinic lines, or the sharper the contrast between lines and background brightness, the greater will be the strain within the lens. Too much strain, however, produces brittleness, and better contrast should be of medium density.

Aides who check lenses should not only verify refractive power but should inspect them in a fold of Polaroid film for properly balanced and centered birefringence. Lenses with scrambled or grossly irregular stress distribution should be discarded or retempered.

Heat treated lenses should *not* be drilled, because this breaks the strain system. The resiliency of plastic rims enhances impact resistance. When

metal rims are used care should be taken in tightening screws in order to avoid uneven strain. Lenses which become scratched or pitted should be discarded because surface flaws disrupt the tension compression system, thereby reducing its effectiveness and affording germinal centers for fracture systems.

Plastic Lenses

In the mid 1940's the advent of allyl resins of optical quality (allyl diglycol carbonate; CR-39; Selectron; Kriston) made possible the first major steps toward practical plastic lenses, following abortive attempts with celluloid and methyl-methacrylate (Plexiglas, Lucite, Transpex). The optical properties of many clear plastics are excellent but surface hardness has been a practical limitation, still imposing extra care in handling. Impact resistance to large, low-speed projectiles and minute high-velocity missiles is better in plastic lenses than in any current glass material. In high-minus cylinders this difference is particularly marked. Allyl lenses (Armorlite, Aolite, Enduron, Optilite A, Safe-t-vis) are generally created by molding, which is an expensive initial process. In mass production, however, the unit cost can be greatly reduced. Generation of highly perfect, aspheric surfaces thus can become inexpensive whereas such curves in individually surfaced lenses demand prohibitively expensive hand grinding. "Cristyl nonglass" lens blanks which can be surfaced in most optical shops are now being marketed.

Early problems of lens discoloration (Tulca, Plastolite) have been essentially eliminated by carefully controlled modern processing. Plastic materials reduce lens weight by 50 to 60 per cent in comparison to glass, a distinct advantage to many wearers, especially those with strong prescriptions. Uniform density filters (Armorgrey, Armorlite Sunmaster green, Enduron neutral grey and green) are prepared from allyl resins with technical ease by surface dyeing. These are less affected by welders' splatter or hot metals than are glass lenses.

General Principles

Impact resistance increases with thickness and with temperature. Increasing symmetry of the lens surface also increases impact resistance. Thus high plus spheres are inherently stronger and minus cylinder lenses are inherently weaker. Softer plastic materials (cellulose acetate, methyl- methacrylate) generally have greater impact resistance due to greater resiliency and yield more benign fracture patterns when broken. Harder plastics (allyl resins) are more durable but yield more fragments on rupture. Fragments of glass, unless leaded, are difficult to demonstrate on x-ray; localization of plastic fragments is further compounded by their even lower radiation density. Rarely a heat treated lens may spontaneously implode, creating considerable alarm but no damage to the wearer. This is usually related to inaccurate tempering and poorly balanced stress patterns.

Use of Specific Materials

Heat toughened glass in 3 mm. industrial thickness should be used in hazardous activity, violent contact sports and high minus corrections for children.

Heat toughened semiophthalmic thickness glass is desirable for higher

plus spherical corrections in children or patients in relatively hazardous non-industrial exposures. It should not be used in high minus spheres, minus cylinders, or for industrial lenses, either plano or protective-corrective.

Allyl resin lenses in industrial thickness (Armorlite industrial, Optilite A, Plastough) should be used in high minus cylindrical corrections, exposure to minute fragments and for welders, except where grime or perspiration require frequent wiping. Their reduced tendency to thermal fogging is some advantage when movement in and out of cold areas is necessary.

Allyl resin lenses in ophthalmic thickness (Armorlite ophthalmic, Enduron, Safe-t-vis, Aolite) may be used for most refractive corrections other than high minus cylinders.* These are not available, as yet, in trifocals. Their surfaces are more easily marred, and thus wearers should be advised to use care in handling them. Such lenses should be cleaned by rinsing with water and wiping on a soft tissue. Hard cloths or silicone papers should not be used. These lenses cost about the same as heat treated glass.

Conventional crown glass lenses are acceptable for certain sedentary non-industrial occupations. They should never be prescribed for children, sportsmen, industrial workers, drivers, do-it-yourself craftsmen, for sun glasses or as plano protective lenses. Since records show that eye accidents can happen anywhere at any time, the routine wearing of shatter-resistant corrective lenses is strongly recommended.

* A French lens of the allyl type, "Orma 1000," is engineered to greater minimum thickness in minus cyclinders than is commonly found in North American lenses, and therefore offers greater impact resistance in such refractive powers.

PROBLEM OF THE DIABETIC

Since the life span of the diabetic has been increased by improved diet and drugs, the problem of visual defects is correspondingly on the increase, reports Dr. Alfonse A. Cinotti, assistant professor of ophthalmology, Seton Hall College of Medicine and Dentistry.

In *Public Health News*, publication of the New Jersey State Department of Health, Dr. Cinotti states that the typical diabetic changes in the retina have been found to occur in only a small percentage of diabetic cases of less than five years duration, but after that the frequency rises rapidly. In cases where diabetes has lasted from 10–15 years the incidence is between 40 and 70 per cent, and in cases of 15–20 years duration the incidence rises to 70 to 90 per cent.

Dr. Cinotti stresses the importance of discovering the diabetic condition as early as possible in order to bring it under control. The diabetic should be cautioned that visual problems may develop unless he remains consistent in his treatment.

TEACHING OPPORTUNITY

There is an opening in the public schools of Port Huron, Michigan for a teacher of the partially seeing at the elementary level. Beginning Bachelor's Degree salary $4,700; Master's Degree $5,000; $200 per year increments.

Port Huron is said to be an outstanding community in which to live and teach. It has a school population of 14,000. For information and details write to Gerald S. De Grow, director of instruction, Board of Education, 509 Stanton Street, Port Huron, Michigan.

THE EYE IN OLD AGE

A Clinical and Pathological Report

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A 15-year study indicates that a substantial number of persons maintain good to average vision even in the later decades of life.*

THE medical, social, and economic aspects of the problem of the aged are increasing in importance and extent as the aged population increases with each passing year. The eye and its difficulties are an important segment of this problem.

This presentation is an effort to evaluate some of the problems of the eye in old age, and to give the results of the investigations that have been carried on at the Hospital and Home for Aged and Infirm Hebrews of New York City for the past 15 years.

The Home is a fairly large institution with a resident population in its several facilities of over a thousand individuals of both sexes. Females exceed males by a ratio of 6 to 4. About half of this group is ambulatory and moderately self-sufficient; another 25 per cent is semi-ambulatory, needing nursing care; and the remaining 25 per cent is bedbound, needing medical and nursing care. The range in age is from 65 to over 90 years; the largest group is in the 70 to 80 decade and the next largest group in the 80 to 90 decade. Complete medical records are kept on all residents. Eye examinations are done as soon after admission as possible, with annual rechecks. An eye clinic is available for the care of those requiring medical attention. Finally, at the time of death it has been possible to obtain post mortem examinations of viscera, brains and eyes in a goodly number of cases. In this way a great fund of information has been accumulated over the years correlating the clinical, laboratory, and pathological findings with reference not only to the general conditions of the patients, but, of particular interest to us, the conditions of the eyes.

Visual Acuity Survey

The first problem approached was that of visual acuity. A statistical survey was done on 1,068 of these aged persons.[1] The vision recorded was the best that could be obtained with correction. The result, as shown in Table I, was a little surprising since it indicated that a large number of persons of age 65 and over have good to adequate vision even in the later decades. Combined figures for the first and second groups show that 86.0 per cent of these patients had good to adequate vision, and that 14.0 per cent had poor vision to no light perception.

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 12, 1961.

Good vision diminishes with each successive decade, approximately 20 per cent. But fair vision, 15/50 to 15/70, increases, so that even in the age 90 and over group 67.4 per cent had good to adequate vision. In the 80 to 89 decade good to adequate vision was 80.3 per cent. Poor vision increases by 10 to 15 per cent in each succeeding decade.

In brief it can be stated that while one may expect visual acuity to diminish as one grows older the prospect of retaining good to adequate vision in one or both eyes is much better than was originally expected. Our findings have been corroborated by another study of 801 patients reported by Gordon at an exhibit at the Annual Meeting of the American Academy of Ophthalmology and Otolaryngology in October, 1960.[6] In his group of patients—aged 65 and over, taken from private practice—83 per cent had good to adequate vision of 20/20 to 20/50, and 17 per cent had poorer vision to no light perception.

Prevalence of Cataract

The next question studied was that of cataract formation in the aged. This subject needs clarification for a non-medical group. When the average lay person hears the word cataract he immediately associates it with considerable loss of sight. But ophthalmologists will note the presence of a beginning cataract and may not even mention it to the patient because the visual acuity of that eye may still be 20/20 to 20/30. We, therefore, have classified cataracts on a functional rather than on a structural basis:

Cataract	*Vision*
Incipient	Up to 15/30
Immature	From 15/40–15/70
Operable	15/100 or less
Operated	

Table II shows the percentage of the different types of cataracts in the under and over 80 age groups. The total number of eyes with cataracts of all types was 1,300 or 60.9 per cent of the entire group. Of the under 80 group, 713 eyes had cataract or 52.2 per cent of all eyes in this age group. In the age group 80 and over, 587 eyes had cataract, or 76.1 per cent of all eyes in this group. This is in agreement with other observers who have recorded the increasing incidence as the individual grew older. It will be

TABLE I

Distribution of Visual Acuity Measurements in 2,136 Eyes By Visual Estimate Classification and Age Group

Visual Estimate	AGE GROUP									
	65–69		70–79		80–89		90 and over		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Good to useful..15/15–15/40	228	85.4	859	78.2	418	57.7	18	39.1	1,523	71.3
Fair to adequate 15/50–15/70	16	6.0	122	11.1	164	22.6	13	28.3	315	14.7
Poor.....15/100–15/200	7	2.6	45	4.1	65	9.0	8	17.4	125	5.9
Very poor.....15/300–L.P.	11	4.1	55	5.0	69	9.5	6	13.0	141	6.6
No light perception.....	5	1.9	17	1.6	9	1.2	1	2.2	32	1.5
Total.....	267	100.0	1,098	100.0	725	100.0	46	100.0	2,136	100.0

TABLE II

Distribution of Cataractous Eyes
By Type and Age Group

Age Group	TYPE OF CATARACT									
	Incipient		Immature		Operable		Operated		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
65–79	294	41.2	332	46.6	49	6.9	38	5.3	713	100.0
80 and over	120	20.4	338	57.6	72	12.3	57	9.7	587	100.0
Total	414	31.9	670	51.5	121	9.3	95	7.3	1,300	100.0

noted, however, that only 121 eyes were in the operable group and only 95 eyes were operated upon. The operable eyes represent 9.3 per cent of all cataract eyes and 5.7 per cent of the entire group. The 95 eyes actually operated on represent 7.3 per cent of all cataract eyes, and only 4.4 per cent of the total group.

There are several reasons for this small percentage. Many older people have one eye that is stronger than the other, and operation is delayed until the better of the two eyes begins to fail. Also, many older individuals are content with their limited vision in their limited sphere of activity. Others may be too infirm for surgical intervention, though lately this group is growing smaller due to increasing awareness of operative possibilities.

Still another group of patients have great fear of surgery on the eye. It is with this group that the social worker can do much good in explaining the nature of the operations and in removing or lessening the natural fears of surgery.

Glaucoma Studies

The statistical survey also included determination of the number of patients who had glaucoma, or a suspicion of the disease. The results are shown in Table III. In this study between 5 and 6 per cent of our residents were found to be glaucomatous. However, a further study of the group with tension of 26–30, which included tonography and field studies, showed that a certain number of these cases were actually cases of glaucoma. In our last report, published in the *American Journal of Ophthalmology*,[2] the percentage of glaucoma increased from 5 per cent to 9.6 per cent. This is higher than the percentage reported in the average population over age 45, and indicates that there is an increasing tendency to glaucoma in the aged.

We were fortunate in having in our collection of post mortem eyes a number which had suffered from glaucoma during life, but which had never undergone surgery. These are relatively rare specimens since such eyes seldom get to the pathologist. Several such eyes were cut in serial sections and examined for the pathology of glaucoma.[3] The most important changes were found in the angle of the anterior chamber. This is the region where the circulating aqueous fluid drains out of the eye. It was found that the drainage channels were markedly compressed and constricted. This would appear to indicate an obstruction to the normal outflow of aqueous fluid, a damming back which in turn causes a rise in intraocular pressure.

These findings are in line with the results of tonography which measures the rate of outflow of the aqueous fluid. The rate of outflow in glaucomatous eyes is markedly diminished as compared to normal eyes. Whether this interference with outflow is a cause of the glaucoma or a result of increased pressure in the eyes still has to be determined.

Hazards of Surgery

A study was made of all our operative cases over the past 15 years in order to determine if old age per se is a special hazard to ocular surgery.[4] One hundred and eighteen eye operations were done, including 85 for cataract and 18 for glaucoma. They are listed in Table IV. All of these patients had numerous medical conditions, some of which were quite severe. Nevertheless, if the patient was up and about and was anxious for the operation it was performed. The major contra-indication was the presence of a psychotic state which rendered the patient unmanageable or unaware of his visual status. If the patient's eye condition was such that he was in danger of losing his sight—as in glaucoma—operative intervention was strongly urged. The results of operation were exceptionally good and the operative complications were relatively few. There were two deaths, one on the second day, and the other on the 14th day postoperative.

The two cases in which death occurred are worthy of special consideration. In one there was a history of previous myocardial infarction and repeated bouts of cardiac failure over the preceding two years. However, the operation was performed because the patient was completely disabled by her cataracts and personally requested that the extraction be done. Death due to myocardial infarction occurred two days postoperatively. One can only wonder whether this death was due to the operation or might not have occurred anyway. The second case, in which congestive heart failure and death occurred 14 days after operation, raises the same question. Since people in this age group are continually suffering incidents of myocardial infarction, pulmonary infarction, and other emergencies, an occasional complicating incident of such type may be expected to occur coincidentally with surgery. However, even if we attribute these unfortunate sequelae to the surgical intervention they still constitute an extremely small percentage of the total.

TABLE III

Per Cent Distribution of Glaucomatous Eyes By Tension and Age Group

Tension (mm. Hg)	AGE GROUP				Total	
	65–69	70–79	80–89	90 and over	No.	%
25 or less	85.2	83.6	85.4	89.8	1,604	84.6
26–30	8.6	11.3	9.6	5.1	194	10.2
31 and over	6.2	5.1	5.0	5.1	99	5.2
Total Per cent.	100.0	100.0	100.0	100.0		100.0
Number.	244	956	658	39	1,897	

TABLE IV

Types of Ocular Surgery Performed on 118 Patients 65 Years of Age and Over

Type of Surgery	No. of Patients	
Cataract procedures		89
Intracapsular extraction	68	
Extracapsular extraction	17	
Discission	4	
Glaucoma procedures		18
Retinopexy		4
Enucleation		2
Dacryocystorhinostomy		1
Dacryocystectomy		1
Biopsy of lacrimal gland		1
Tarsorrhaphy		1
Sphincterotomy		1
Total		118

The results as regards vision after cataract operation are listed in Table V. It is safe to say that these results could be improved upon with our modern methods of surgery. Most cases are now done intracapsularly—so that after-cataracts are avoided, by and large. Also with the use of sutures it is possible to get older patients out of bed after 24 hours, and post-operative complications, especially of the heart and lungs, are diminished.

The conclusions arrived at as a result of this study are that the field of operative treatment of ocular diseases in the aged is much wider than had heretofore been realized. The determining factor is the functional status of the person, rather than the chronological age. Beneficial ocular surgery should not be withheld because of undue emphasis on the risks.

Macular Degeneration

At the present time we are engaged in a study of the causes of macular degeneration in the aged. The macula is that part of the eye that has to do with daylight vision, color vision, and the ability to read, write, sew, and do other fine work. Unfortunately, this part of the retina is the most vulnerable and it undergoes degeneration and atrophy in about 30 per cent of our residents.[5] The cases are not all of equal severity but there is always some impairment of visual acuity and occasionally complete loss of central vision. Side vision is often well-retained so that these patients are able to get around and take care of themselves, but are deprived of the capacity to identify people, enjoy television, read or do fine work.

It is with this type of case that most of the work on aid to people with subnormal vision has been done. We have used magnifying glasses of many types. The prevailing opinion up to now has been that this is an hereditary disease, with little hope of prevention and treatment. However, of late it has been considered that the retinal circulation may have more to do with the condition than was thought previously, and this has stimulated the study of the retinal circulation in the aged. We have undertaken the work at the Home because of our ability to study these eyes before and after death. It has involved special stains of the retina and injection of the central retinal artery with India ink. When one knows that the calibre of the central retinal artery is about 1/50 of an inch, one can realize the difficulties of injecting fluid and then taking photographs of the results. Our objective is to accumulate enough of these specimens and to compare them with the clinical picture. If there is a correlation between the two it will then be possible to state that the retinal

arteries partake of the general diseases of the arteries in the body, and whatever beneficial results are obtained by diet, medication, exercise or other form of treatment may also help the retinal arteries. In this way it may be possible to prevent or diminish the frequency or severity of the type of blindness associated with macular disease in the aged.

Summary

The statistical study of the eye in old age has shown that about 85 per cent of people 65 years of age and over have good to adequate vision, 15/15 to 15/70. Poor vision to no light perception is present in the remaining 15 per cent.

Glaucoma is present in 5 to 9 per cent of the aged population, depending upon the criteria used for determination of glaucoma. Pathological studies of unoperated glaucomatous eyes showed changes in the angle and trabeculae of the anterior chamber, which can cause obstruction to the outflow of the aqueous fluid.

Cataract formation increases regularly with increase in age. Nevertheless, operations for the removal of cataract were performed only on about 5 per cent of the group studied. It was also found that older people withstand eye operations much better than was expected. This is especially true today with the great improvement in operative technique.

Macular degeneration of varying degree is present in about 30 per cent of the aged. This condition also increases with advancing age, about 15 per cent with each decade. The study of the causes of this condition are now under investigation, especially as it affects the retinal circulation.

TABLE V

Vision After Cataract Extraction in 85 Cases

Vision	Intra-capsular	Extra-capsular
15/20	3	0
15/25	8	1
15/30	14	4
15/40	18	6
15/50	8	1
15/70	8	0
15/100	2	0
15/200	7	5
Total	68	17
15/70 or better		
Number	59	12
Per cent	86.8	70.6

Support for the Research

Financial support for the research work on the eyes has come from several sources. The National Institute of Neurological Diseases and Blindness contributed the major portion. Additional help has come from the medical research fund of the Home for Aged and Infirm Hebrews and, more recently, from the National Council to Combat Blindness, Inc. and the Fanton Foundation. We wish to acknowledge this support with gratitude.

We also wish to acknowledge the encouragement and moral support of Dr. Frederic D. Zeman, chief of medical services of the Home, the members of the board of trustees and the administration.

Finally, I wish to express my appreciation to my associates, Dr. Morris Feldstein and Dr. Julius Schneider, without whose yeoman work this report would not have been possible.

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HELP FOR JIMMY

Noted in the *Reflector*, published by the Pittsburgh Branch, Pennsylvania Association for the Blind:

A partially sighted child was recently referred to our Prevention of Blindness Department. Shortly thereafter we received this letter from the school:

"We wish to thank you most sincerely for supplying us with the special books for Jimmy D. Your interest, co-operation, personal visit and promptness in supplying our needs were most appreciated. We can happily report that Jimmy has already begun to show improvement in his work. May we thank you again for your assistance. It is our hope and prayer that you, and the Association, may continue to help the many children like Jimmy."

SCHOOL SAFETY FOR THE VISUALLY HANDICAPPED

Handicapped children require more than the average amount of training in school safety to meet emergency situations, states Dr. Ray Graham, director of the division of special education, Illinois State Department of Public Instruction. In an article in *Exceptional Children* for March 1961, he emphasizes that the safety of the partially seeing child is closely related to the physical facilities of the school building. Saving money by cutting costs in school construction results in greater hazards. A minimum of 50 square feet should be required in an average room for each child.

The teacher should be thoroughly acquainted with the building. Ramps and elevators may represent hazards at times and other means of evacuation must be used. Railings on both sides of each stairway are essential for visually handicapped children. Their rooms should be on the ground floor and close to exits and entrances wherever possible. Classrooms and corridors should be properly illuminated.

Safety in school is a part of the teaching-learning process, Dr. Graham states, and the school personnel must plan and practice for every possible emergency. Teachers should have assistance in moving handicapped children in such situations since the pushing and excitement may make their safe exit difficult.

CONSERVING VISION OF THE AGING
Social and Emotional Problems

MADELINE SHIPSEY

Director, Medical Social Service
Massachusetts Eye and Ear Infirmary, Boston

The gentle persuasion, guidance and understanding of the trained social worker help the elderly patient to comprehend the nature of his eye problem and to face needed treatment.*

CONSERVATION of vision of our aging population urgently demands our attention in view of the growing magnitude of the problem. In the social service department at the Massachusetts Eye and Ear Infirmary 451, or 50 per cent, of the eye patients receiving continued casework service last year were in the 60-plus age group, with a startling 25 per cent over 80 years of age.

Eye problems have serious implications for the older person as he struggles to hold his own in a world where the accent is on youth. Regardless of age or capacities for achievement, most older people are still striving for recognition, are anxious to be needed and useful, and are still pursuing goals which have been meaningful to them in the past. Any threat to their personal and economic self-sufficiency, or the fear of total isolation from the stream of life, can well be catastrophic. When faced with a serious eye problem, however, they may feel quite unprepared to deal with it, if personal resources and family support are limited. Frequently they are hard put to decide which holds the greater hazard for them, their eye problem or the many disturbing elements in the treatment situation.

When success in meeting past crises has been limited, and inroads of age upon self-esteem and resources have been marked, the older person's motivation to struggle with his eye problem for the sake of a future gain may be minimal.

Some older patients find no real threat in blindness and welcome the opportunity it gives them to take on acceptably a more dependent role. Such a reaction may reflect their weariness with life's struggles or be evidence of more neurotic dependency needs which never have been completely satisfied.

Lengthened Life Span

Since older persons can now look forward to a longer life, with many more personal satisfactions possible than was true even a decade ago, they stand to gain much from their efforts to preserve their vision. Many are able to do so with little help because of their personal strengths. Others are

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 12, 1961.

less fortunate and may well become severely disabled without adequate professional services. It is this group which concerns us here. Essential to our professional task in helping them is understanding of the special trauma for older patients in medical treatment, assessment of their capacity to deal with the trauma, as well as skill in providing the guidance, support and practical services which are necessary to serve them adequately. The responsibility to understand and assist with this problem is not limited to the social worker. All the helping disciplines have a part to play.

Obstacles in the Treatment Situation

Let us consider some of the special elements in the medical and social situation of the aged which can present obstacles to adequate treatment.

In our experience at the Infirmary the older patient often seeks help when the circumstances of the treatment situation threaten to upset the precarious equilibrium of his life. For some the threat may come with a recommendation for surgery. For others the complexities and strangeness of the hospital environment, or the prospect of a nursing home, provide the stimulus for active resistance to recommendations. When the patient is refusing admission we frequently find he has a long history of eye difficulty with few treatment results which meet his criteria of success.

Even if he is a new eye patient he may already be anxious about the possibility of blindness as he observes patients in the clinic who do not see, or he contemplates wearing a double eye bandage himself. The delicacy of the eye makes him fearful of trusting the surgeon's skill. Especially if his eye problems are long standing he wonders if he shouldn't leave well enough alone, since he has no guarantee of success.

He may be worried about more than his vision. A heart condition, a kidney problem, arthritis or other disease may make him wonder how well he will stand up to a hospital experience. Many older patients are acutely aware that restricted activity may slow them down for good. Some are openly worried that this experience may affect their minds. They remember friends who began to "slip" after surgery.

Problems at home may be another factor in the dilemma. The patient may have a job he is trying to hold, or an invalid spouse for whom he is responsible. Perhaps he lives alone, with no one to look after his affairs, to assure him of care upon his return from the hospital. If he is advanced in years his rigid pattern, slower tempo, and distaste for change will make any new experience difficult. The patient may have come alone from a distant city to the hospital and be fearful of making a decision by himself. Frequently, however, he is pressured by anxious relatives or over-zealous staff who give him little opportunity to think things out before he finds himself caught up in the swift and bewildering pace of the hospital. This patient may be in for real trouble during his hospitalization unless there is suitable intervention at this point aimed at slowing down the whole tempo of the situation, restoring to him the right and opportunity to think through what the experience involves, and what he wants to do about it. Information as to what lies ahead, plus even a few hours to return home, put his life in order and prove to him-

self he is still in control of his own affairs may be all the reassurance he needs to enter the hospital with some security.

Of course, help can be more effective when time is on our side. The older patient really needs ample opportunity to go over and over his questions and fears, with patient interpretation from us as to what to expect. Adequate time may also be necessary to work out satisfactory solutions to his home problems. Even more important to his security, however, is our recognition of him as an individual, and the development of a good relationship on which he can depend through the difficult days ahead.

Psychiatric Consultation

When these supportive measures seem ineffective, and the patient's anxiety quite out of proportion to the situation, a psychiatric consultation may be necessary for his protection. The psychiatrist can help us assess the patient's tolerance for stress and can suggest protective measures if surgery is especially urgent.

Our older patient may manage to conceal his uneasiness until he finds himself alone in the strange world of the hospital, actually facing a surgical experience, without his usual means of control or escape. His anxiety may show up then in complaints and irritability, in stubborn evasion of rules, or constant demands for attention. Sometimes he threatens to leave. These reactions are actually pretty healthy ones, reflecting energy and motivation to meet his problems if we can help him re-direct the energy to more constructive channels. As we explore his concerns at this time we find many of the same worries seen in the patient resisting admission. The same helping techniques are effective in this phase of treatment—understanding of him as an individual, respect for his ideas, support when he is fearful, restoring as many controls as possible when he seems anxious about what will be done to him. Patience and sensitive timing are essential.

When the patient is passive and withdrawn, however, there is real cause for concern, since it often means the anxiety is becoming too much for him to handle. The most extreme expression of such withdrawal is the familiar black mask psychosis which sometimes follows surgery, in which the patient tries to adapt himself to the pressures of the situation by denying it exists at all, and suffering temporary delusions as to time, place and medical problem.[1] Emergency measures under the direction of a psychiatrist are obviously needed to help this patient regain his hold on reality.

Helping measures early in the hospitalization may well prevent the development of a psychotic reaction. They might include careful orientation of the patient to his surroundings, preparation for new experiences, a consistent relationship with a staff member able to give the time to get to know the patient and his interests, and encouragement of family visiting, all designed to help the patient maintain his contact with reality.

Convalescent Period

Often the success of surgery depends upon the protection and limited activity of the patient during convalescence. Usually he is eager to return

[1] Weisman, A. D.; Hackett, T. P.: Psychosis after Eye Surgery, *New England Journal of Medicine*, 258; 1284–1289, 1958.

home to the familiar pattern of his life, where he can again be independent. When vision is poor or his mental state precarious the return to familiar surroundings is especially important. Often, however, the family is anxious about assuming responsibility for his eye care. In such a situation instruction by the floor nurse regarding drops and other home care, or helpful pamphlet material, is valuable in allaying their fears. For some, help from the visiting nurse is an added security.

The daily services of a homemaker plus supervision by the visiting nurse may permit the patient living alone to return to his home also. Unfortunately, homemaker services are not available in every community, nor in sufficient supply anywhere to meet the demand. Community attention needs to be drawn to the value of more of these services for the older patient.

When nursing home care seems the only solution the older patient is often greatly distressed. He may share the feeling of other older people that nursing homes are places where old folks are left to die. If he already feels rejected and a burden to his family he fears this will be his own fate. Our sympathetic understanding and recognition of his feelings, along with assurances of our concern to help him retain control over his affairs will help relieve his anxiety. Involvement of the patient in the selection of the nursing home as well as follow-up visits to assist with his adjustments there should further modify his fears, and enable him to accept needed care.

Attitude toward Clinic Situation

So often in our concern with the in-patient and convalescent adjustments of the older patient, or the special implications for him in his eye disease, we tend to minimize the difficulties inherent for him in the organization of clinic care. Yet these may be the final cause of breakdown in the medical regime.

While the organization of the clinic may have its own logic and efficiency from the standpoint of the staff, it may make little sense to our older patient, who is only aware of its complexity, and the fact he seems to move through it at a snail's pace. Although he waits endlessly, everyone is in a hurry when dealing with him. The staff may show little patience with his slowness and repeated questions. If he sees a different doctor at every visit he may begin to feel no one perceives him as an individual or really cares what happens to him.

When his general stamina and tolerance for fatigue or confusion are limited the stress of the visits may well be too much for him. If he is somewhat senile or has a personality problem he may become a disturbing influence in the clinic and experience much rejection.

While individual attention can modify the stresses of the clinic situation for the patient, there are some basic measures possible in most clinics that will improve the general atmosphere for all the patients, particularly the older ones who make up such a large part of the clinic population, and who are likely to be regular customers as various eye problems develop.

First, preserve the patient's relationship with one physician as far as possible, particularly when the medical problem is severe, or the patient obviously anxious. Second, encourage among the staff a general attitude of

warm interest and flexibility when dealing with the patient, rather than one of indifference, rigidity, or impatience. The security of the clinic's sincere interest may greatly reduce the anxious patient's need for constant attention. Third, provide small comforts to ease the waiting time, such as comfortable seats, interesting magazines and pictures, soft music and a handy lunch counter.

Fourth, establish a transportation service to help facilitate the travel to clinic of elderly, infirm or blind patients. Fifth, provide a guide service for the blind patient or the older person who is too frail, confused or difficult in personality to manage clinic procedures alone and has no family available to help him.

Sixth, provide a variety of educational opportunities within the clinic for the patient and his family such as pamphlets on special eye problems, instruction by the nursing staff on how to instill drops or administer other treatments to be done at home. Provide for small-group lectures by an ophthalmologist, possibly outside clinic hours, for certain diagnostic groups such as glaucoma or retina patients, where those new to these diseases may be helped with further understanding of the eye problem and how they and the clinic can help with it.

Seventh, utilize the social service staff in helping the resistant, difficult, or anxious older patient who must have one anchor person in order to feel safe in the clinic setting and needs much time and patient effort in order to cope with its complexities.

Such measures go a long way to assure more consistent clinic attendance, so vital to conservation of vision. While the relative discomforts of the clinic play a part in poor attendance, the attitude of the patient toward his medical problem, his understanding of medical recommendations, and the quality of his relationship with his doctor are also significant elements.

Sometimes the older postoperative patient wants more frequent visits to reassure himself that things are going well, and he would be helped by greater flexibility in this regard. Increasing irregularity or sudden termination of visits usually suggests the patient's dissatisfaction with the clinic, discouragement about his care, or flight from a frightening diagnosis or recommendation.

Failure to return after one or two visits often occurs when the patient comes seeking a change in glasses and suddenly is faced with glaucoma or cataract surgery. These patients are quite immobilized by their problem and often need follow-up by social service to help them overcome their fears. Others lapse treatment because it has become so routine they feel little is happening and see no gains from their efforts. These patients particularly need recognition and individual attention, especially from the doctor, to motivate them to continue.

Impact of Glaucoma

Any discussion of the eye problems of the aged must include some mention of glaucoma. The reality impact of this disease is heavy, in view of its constant threat of blindness, its chronic (often downhill) course, and the rigid demands of the treatment regime which severely tests the memory and the established habits of the patient.

Some thirty years ago the National Society for the Prevention of Blindness supported the development of the

prevention program for glaucoma patients at the Massachusetts Eye and Ear Infirmary, of which we are now very proud. It includes 100 per cent review by Social Service of all new glaucoma patients, 100 per cent follow-up by the eye clinic on unkept appointments, and continued social services whenever and wherever needed. In spite of this solid program of educational and supportive services, an average of 15 patients a month are referred back to Social Service as seriously resistant to follow-up efforts.

While many of the new glaucoma patients appear troubled and anxious in initial interviews, in general they seem quite unable to acknowledge concern and usually accept help only in a crisis. Their denial is so consistent we have come to believe that more understanding is needed of their social and emotional characteristics in order to find some answers to helping them. The professional literature reports only scattered efforts in this direction with little consistent agreement evident. This situation seems to suggest an area for intensive research in the future, with the goal of determining what the disease does to the individual as well as the possible social or emotional elements in its etiology. Since glaucoma is a major cause of blindness among the older age group, such a study could be a significant contribution to conserving the vision of the aging.

Miss B. Discusses Her Problem

Recently an elderly lady, Miss B., was referred to a social worker in our Eye Clinic for help with her great dilemma over a recommendation for surgery. As she unfolded her problem, with gentle persuasion from our worker, it proved to be an eloquent example of the real concerns of the older patient. This little lady's own words summarize best the nature of the problem and the essence of the helping process for our older eye patients.

Miss B. is 82 and has been living for some years in a home for older people run by her church. She has been quite happy there and has a good relationship with her old age assistance worker, Miss K., with whom she shares many problems. Miss B. was encouraged by Miss K. to seek the advice of the clinic about her failing vision, but was very frightened when cataract surgery was recommended.

Following are some quotes indicating her reactions as her interview with the social worker progressed:

"I have made up my mind, in my state of fear, surgery could not possibly be successful."

As the worker explored further:

"I am afraid of what the doctors will do to me. . . . I've heard sometimes people my age lose their minds. When you are old it's easy to lose your mind, then you won't know what you are doing."

"They pull at the cataract to get it off. . . . Will both my eyes be covered? When will they let me up?"

"There are other things I have to get straightened out. Is there a priest on duty? . . . There is much to think about in such a decision. I wonder why I should bother with surgery at my age. Is it worth the risk? . . . I have hardening of the arteries. Maybe it's not safe to operate on me."

"After surgery I would need much care. The sisters at the home are too busy to care for me."

"I appreciate your spending this time with me. It's very important to people alone in the world with no one to advise them."

Dr. Cordes Awarded 1960 Leslie Dana Gold Medal

FREDERICK C. CORDES, M.D., eminent San Francisco ophthalmologist and educator, has been named winner of the 1960 Leslie Dana Gold Medal for meritorious work in the field of sight conservation and prevention of blindness. He is the 35th recipient of the award which was established in 1925 by Leslie Dana, a public-spirited businessman and civic leader of St. Louis.

The St. Louis Society for the Blind determines the annual winner of the award from among candidates nominated by the National Society for the Prevention of Blindness. Presentation of the medal to Dr. Cordes was made on April 27 at a dinner in his honor, sponsored jointly by the St. Louis Society for the Blind and the St. Louis Ophthalmological Society.

A native of San Francisco, Dr. Cordes graduated from the University of California in 1918. He returned as an instructor in 1921 and became chairman of the Department of Ophthalmology in 1934.

A former chairman of the American Board of Ophthalmology, Dr. Cordes has also been president of the Council of the American Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, and the Pacific Coast Oto-Ophthalmological Society.

In accepting the medal Dr. Cordes paid tribute to the work of the volunteer organizations whose "unselfish and untiring efforts have resulted in advances in prevention of blindness and rehabilitation of the blind," and

Dr. Bernard Becker of St. Louis presents the medal to Dr. Cordes.

he cited many evidences of progress. He emphasized particularly our obligation to see that everything possible is done to help the visually handicapped child grow into a happy, self-respecting and valuable citizen. In the care of these children, he said, the ophthalmologist plays an important part. He must impress on parents and teachers the following principles:

The child must be permitted to use his eyes to the fullest of his ability. No damage will result from so-called overuse.

Use should be made of any type of visual aid that may help his vision.

Too much importance should not be placed on the results of the vision screening test; rather, the child's ability to perform tasks should be the deciding factor in what he is permitted to do.

Frequent examination for glasses should be carried out, as even small improvement in vision is important to the child.

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OPHTHALMIA NEONATORUM
Yesterday, Today and Tomorrow

GILBERT W. MELLIN, M.D.

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New York City

An important study of the factors and risks involved in removing public health requirements for prophylaxis of the eyes of the newborn*

". . . to rely on data, the nature of which one does not understand, is the first step in losing intellectual honesty."[1]

—Sir George Pickering

THERE is a folk tale which originates in India that is appropriate to this discussion. It concerns the blind men who set about to describe an elephant. Those who felt the elephant's head said: "An elephant is like a water pot." Those who felt the ears said: "An elephant is like a winnowing basket." Those who felt the tusks said: "An elephant is like a plowshare." Those who felt the trunk said: "An elephant is like a plowpole." Those who felt the belly said: "An elephant is like a granary." Those who felt the legs said: "An elephant is like pillars." Those who felt the back said: "An elephant is like a mortar." Those who felt the tail said: "An elephant is like a fan." And they fought among themselves with their fists, saying: "This is what an elephant is like, that is not what an elephant is like." "This is not what an elephant is like, that is what an elephant is like."[2]

To the obstetrician gonorrheal ophthalmia neonatorum is the result of maternal infection. To the ophthalmologist it is a severe disease of the eye which may result in blindness. To the pediatrician it is a neonatal complication of no minor consequence. To the bacteriologist it is an infection with an organism which is very fastidious and difficult to culture, and identify. For the epidemiologist it is an ubiquitous dilemma. For the public health worker it is a situation which should be reported; and to the statistician, it is a condition which is being reported less frequently, both initially and as manifested by its complications.

HISTORICAL REVIEW

The first recorded references to ophthalmia neonatorum appeared early in the second century in the writing of Soranus, a renowned gynecologist.[3] Much later Randall in 1545 stated that after the child is born, the cord cut, and the baby swaddled, the eyes

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 13, 1961.

This report was supported in part by the Fetal Life Study, Grant RG-4194 from the Division of General Medical Sciences of the National Institutes of Health, Public Health Service.

should be carefully and frequently washed with warm water.[4] A German by the name of Quellmaltz in 1750 noticed the association of leukorrhea in the mother with ophthalmia in the newborn child.[3,5,6,7] Goetz later in 1791 wrote on this same subject.[5,8] In 1807 Gibson, an English obstetrician observing the same relationship, advised first, to remove, if possible, the disease from the mother during pregnancy; second, if that could not be accomplished, to remove artificially as much of the discharge as possible from the vagina at the time of delivery; and third, to pay, at all events, particular attention to the eyes of the child by washing them immediately after delivery with a liquid calculated to remove the offending matter, or to prevent its noxious action.[9,10] Vetch in 1820 experimentally produced ocular inflammation by inocculation of the female genital secretions.[5,8] Pringer in 1841 also supplied experimental proof,[3,11] but it remained for Neisser (1879),[3,5,12] Hirschberg and Krouse (1881),[5,13] and Bumm,[3,14,15] to establish the relationship of the gonococcus to ophthalmia neonatorum.

The celebrated Carl Sigmund Franz Credé recognized inflammatory lesions of the mother's lower genital tract as a common cause of blindness in infants.[16] In 1854 he wrote: "At the same time, the effect on the fetus must not be overlooked; for during the act of birth the infant's eyes are coated with the corrosive mucus, which then becomes continuous with the conjunctiva and thus becomes the most frequent cause of blennorrhea."[17] However, it was not until 1881 that he made his most famous contribution. It behooves us to look at these early discussions more closely, for he seems to have recognized many aspects of this condition which we are apt to consider recent discoveries.

First, he noticed the social relationship: "Eye inflammations in the newborn in general occur less often in the upper classes, more often in the proletariat."[18]

Second, he was well aware of latent aspects of maternal gonorrhea: "Probably shared by most obstetricians will be my view that the exceedingly common catarrhal conditions and inflammations of the vagina result from gonorrhea, and that the infectiousness of the discharge continues long after the specific gonorrheal manifestations have disappeared. Indeed, infection is still present in the maternal vagina, even in cases where almost no discharge is to be found, if an eye inflammation develops within the first few days after birth."[18]

Third, he attempted prophylaxis starting with the treatment of the mother: "My first efforts included the most meticulous management and as thorough a cleansing as possible of the vagina of the pregnant and parturient patients. The results, however, were meager, not satisfactory. The eye infections declined in number, but they did not disappear. I then began disinfecting the infant's eyes themselves, and henceforth the results became surprisingly favorable. . . ."[18]

Fourth, he describes for us the famous Credé procedure: "From June 1, 1880 on, all eyes without exception were disinfected immediately after birth with a weak solution of silver nitrate (1:50). However, this solution was no longer squirted in, but only a few drops were instilled by means of a small glass tube, into each eye, previously cleansed as before and gently

TABLE I

Results of Two Per Cent Silver Nitrate Prophylaxis

Reported by Credé

Year	Number Births	Number Eye Infections	Per Cent
No prophylaxis			
1874	323	45	13.6
1875	287	37	12.9
1876	367	29	9.1
1877	360	30	8.3
1878	353	35	9.8
1879	389	36	9.2
1880 (to 5/31)	187	14	7.6
	2,266	226	10.0
With $AgNO_3$ prophylaxis			
1880	211	1	0.5
1881	400	1	0.25
1882	418	2	0.5
1883 (3 mos.)	131	0	0.0
	1,160	4	0.3

held open by an assistant. The eyes were then soothed for 24 hours with linen compresses soaked in salicylic acid solution (2:100). The repeated vaginal douches were then given up entirely. . . . All the infants treated in this manner remained spared from eye inflammations, even of the slightest degree, although the mothers showed vaginal blennorrhea and trachomatous proliferation. . . ."[18]

Fifth, he even mentions what might be considered one of the earliest controlled studies: "The infants of affected mothers treated in this manner remained well; while other infants who had not been treated prophylactically because we did not consider their mothers to be affected, continued to get sick. . . ."[18]

Table I presents the dramatic results reported by Credé, a drop in incidence of ophthalmia neonatorum from 10 per cent to less than one per cent.[18,19,20,21]

In 1897 Lucien Howe compiled the data which appears in Table II.[22] It is of interest to note that the incidence of ophthalmia neonatorum occurring after prophylaxis with one per cent silver nitrate was similar to that occurring after prophylaxis with sterile water.

In 1931 Lehrfeld presented figures representing blindness due to ophthalmia neonatorum among the new admissions to United States schools for the blind, as shown in Table III. He exhorted his colleagues with the following provocative comment: "One of the most interesting and pathetic charges against humanity is that portion of the blind population which owes its ostracism from society to ignorance, indifference, and neglect. The disease I refer to is ophthalmia neonatorum. So simple a prophylactic as the instillation of a drop or two of silver nitrate in the eyes of a newborn infant is omitted by reason of prejudice, by reason of sentimentality, by reason of stubbornness, by reason of unwillingness to accept the teachings of those who know. . . . There is no longer need to show proof that silver nitrate in one per cent solution, instilled in the eyes of the newborn, will

TABLE II

Ophthalmia Neonatorum Prophylaxis

1897 Review—Lucien Howe

Number of References Reviewed	Compiled Cases	Per Cent Ophthalmia	
13	17,767	9.2	No prophylaxis
31	24,724	0.65	2% silver nitrate
2	1,223	2.4	1% silver nitrate
12	6,155	2.8	Sterile water
2	1,623	7.7	Carbolic acid
1	965	0.6	0.1% sublimate
3	1,396	0.4	Other sublimate
2	701	1.2	Iodine trichloride

definitely prevent ophthalmia neonatorum."[23]

Table IV represents data provided by the National Society for the Prevention of Blindness.[24] Although it is recognized that these data are incomplete they do indicate a trend which shows that the per cent of children admitted to schools for the blind decreased as prophylactic measures were increased. Finally a further decrease occurred when effective therapeutic measures became available.

SILVER NITRATE PROPHYLAXIS

Is It Effective?

The effectiveness of silver nitrate has been questioned recently.[25,26] One paper describes the number of reported cases in London listed by Mayou,[27] as approximately the same in the years 1915 and 1930. On the other hand, one might have taken from the same report the year 1920 to indicate that there had been quite a reduction for the next 10 years (Table V). Nevertheless, London should not be used as a common denominator. What one must know are the cases at risk. Elsewhere in the literature it is stated that this fluctuation in incidence in London in the 1920's reflects a change in reported incidence rather than true incidence.[28] Also a review of fifteen case histories of eye damage occurring following ophthalmia neonatorum during this era revealed that in only three had silver nitrate prophylaxis been used and that in twelve cases other prophylactic measures had been employed.[28]

Another report referred to was by Lehrfeld, who in 1935 diagnosed ophthalmia neonatorum 632 times from 27,873 records, thus giving him an incidence of 2.3 per cent.[29] Only 30 per cent of these cases were of gonorrheal origin, giving an incidence of gonorrheal ophthalmia neonatorum of 0.7 per cent. Assuming that the cases reported by Credé were gonorrheal in nature, this incidence is very close to that reported in Table I, while the 2.3 per cent is very close to the data given in Table II for one per cent silver nitrate prophylaxis.

Two further points have been made in suggesting the ineffectiveness of silver nitrate. One, that it has not eradicated the incidence of gonorrheal ophthalmia neonatorum. Table VI in-

TABLE III

Per Cent New Admissions To Schools For The Blind Due To Ophthalmia Neonatorum

Reported by Lehrfeld

Years	Per Cent
1907	28.2
1908–12	23.0
1913–17	19.0
1918–22	16.5
1923–27	11.9
1928–30	9.3

TABLE IV

Per Cent New Admissions To Schools For The Blind Due To Ophthalmia Neonatorum

School Years	Number of States Requiring Prophylaxis	Average Per Cent
1906–1911	1	24.1
1911–1916	10	19.1
1916–1921	23	17.5
1921–1926	37	12.9
1926–1931	39	8.9
1931–1936	41	7.1
1936–1941	46	7.4
1941–1946	47	4.8
1946–1951	47	1.8
1951–1955	48	0.5

TABLE V

Reported Cases Of Ophthalmia Neonatorum In London

Mayou—1931

1915.....	760
1920.....	1,186
1930.....	617

dicates that the prophylactic benefits of silver nitrate are not absolute.[30] Although technique is definitely a factor to consider, failure has been reported in a patient used to demonstrate prophylactic technique.[31] The incidence in all the reports in Table VI is under one per cent, but the majority of these figures are of recent origin. This brings up the second point, that the recent drop in the trend of reported gonorrheal ophthalmia and resulting blindness has been due to antibiotics. The factors influencing this trend, however, may not be of a prophylactic nature, but rather influence in the areas of treatment, thus either reducing the risk or curing the infection after it occurs. Therefore, looking at the end result does not evaluate silver nitrate and antibiotics as prophylactic agents. Silver nitrate was never considered a very effective therapeutic agent.[32,33]

Table VII represents data presented by Ormsby.[3] Although these figures would seem to indicate that silver nitrate was effective, the confidence level is greater than five per cent that this might have happened by chance. It should also be emphasized that these data were not gathered in parallel control studies but from different hospitals.

The figures presented in Table VIII were derived from Harlem Hospital in New York City. One report indicates the superiority of silver nitrate in 1952 over the results obtained in 1957 and 1958.[34] A previous report from the same hospital indicated a rather consistent incidence for gonorrheal ophthalmia neonatorum while using silver nitrate prophylaxis for the years 1945, 1946 and 1947.[35] Is it possible that the incidence in 1952 is different because it was gathered in retrospect rather than under specific study conditions?

The experience at the Columbia-Presbyterian Medical Center is presented in Table IX. The figures from 1932 until March 1957 were gathered retrospectively and reveal a low incidence of gonorrheal ophthalmia, 0.013 per cent. Our report in 1958 revealed that the incidence had gone to 0.2 per cent when silver nitrate prophylaxis was discontinued.[30] These figures, however, were gathered under prospective observation. After reinstituting silver

TABLE VI

Incidence Of Gonorrheal Ophthalmia Neonatorum While Using Silver-Nitrate Prophylaxis

As Reported in the Literature

Reference	Patients	Cases	Incidence Per Cent
Mann.....	579	0	0.0
Linn.....	981	0	0.0
Mallek, et al.	1,073	0	0.0
Davidson, et al...	1,368	0	0.0
Wachter and Pennoyer.....	5,489	0	0.0
Dieckmann.....	76,700	0	0.0
Dieckmann.....	28,000	1	0.0035
Dieckmann.....	242,662	10	0.004
Eastman.....	32,290	7	0.02
Dieckmann.....	150,000	38	0.025
Ormsby.....	3,125	1	0.03
Eastman.....	35,000	14	0.04
Pearson.....	67,200	40	0.06
Somerville-Large.	2,701	2	0.07
Franklin.....	749	1	0.13
Bickel.....	682	1	0.15
Dieckmann.....	3,159	6	0.19
Dieckmann.....	4,880	10	0.20
Dieckmann.....	4,587	11	0.24
Watts and Gleich.	10,992	28	0.39

nitrate prophylaxis in October 1957, we have prospective observations under silver nitrate prophylaxis which reveal an incidence of 0.04 per cent. While these figures do not represent a parallel control study, this difference is significant at a five per cent confidence level.

Is Silver Nitrate Safe?

Damage to the eye by the misuse of silver nitrate in too high a concentration is documented in the literature.[36,37] On the other hand, chemical conjunctivitis produced by the proper use of silver nitrate has been bothersome only to the most fastidious. A recent report revealed that G-11 detergent baths reduced the incidence of conjunctivitis following silver nitrate prophylaxis.[38] This would indicate that the severity of conjunctivitis following silver nitrate prophylaxis might be dependent upon factors other than the use of silver nitrate per se.

Because of certain undocumented statements which appear in the literature,[39,40] four drug companies who supply one per cent silver nitrate in wax ampules were asked if they had any knowledge of damage resulting from the use of one per cent silver nitrate solution in wax ampules. Three of the companies replied that they had had no such report. The fourth stated that in 1954 they were in touch with an ophthalmologist in Florida regarding the development of severe conjunctivitis in several newborn infants in whom this method of prophylaxis was used. It was reported that two of the infants treated by the ophthalmologist demonstrated residual corneal involvement. Medication presumably from the same lot of material which was used in these infants was returned for analysis. Although it was impossible to determine that the returned medication was the same as that used in the infants, analysis revealed that the silver content and pH of the returned material were normal. Tests in the eyes of rabbits demonstrated that the degree of inflammation produced by the material was similar to that of regular lots of the medication. The experience of some of these companies represents 20 to 30 years' production of one per cent silver nitrate in wax ampules.

A survey of 57 medical school obstetric departments representing 112,035 live births failed to reveal any knowledge of damage resulting from the proper use of one per cent silver nitrate.[41]

TABLE VII

Gonorrheal Ophthalmia Neonatorum

Ormsby—Toronto
1950–1954

Prophylaxis	Incidence	Per Cent
$AgNO_3$	1/3125	0.03
Washed	5/2020	0.25
Sulmefrin	3/1703	0.18
Sodium sulfacetamide	0/1570	0.00

TABLE VIII

Gonorrheal Ophthalmia Neonatorum

Harlem Hospital, New York City

Years	Prophylaxis	Incidence	Per Cent
1945–47	$AgNO_3$	22/9730	0.23
1952	$AgNO_3$	0/3165	0.00
1957–58	None or Distilled water	5/1935	0.26
1957–58	Bacitracin	4/1996	0.20

Is Silver Nitrate the Best Prophylactic Agent?

With the advent of sulfonamides and antibiotics very effective thera-

peutic agents were discovered.[42,43,44] It was natural to consider their prophylactic value.[3,26,34,35,38,45-63] A new prophylactic agent should be tested under a study designed to assure an adequate risk to gonorrheal ophthalmia neonatorum. To accomplish this the infants must be observed closely and adequate bacteriological investigation performed. Further consideration should be given to the cost of the agent, its stability, sensitizing properties, and availability.

Other problems concerned with the use of antibiotics in the newborn must also be considered. With the systemic use of penicillin unexplained deaths have resulted.[51,54] It was thought that these might have been associated with the Herxheimer reaction. The masking of a congenital syphilitic infection with dire consequences resulting in later life presents a problem. The report of lasting sciatic paralysis resulting from gluteal injections would make one hesitate to undertake this as a routine.[65,66]

The recent discoveries indicate that the metabolism of antibiotics in the newborn, especially the premature, may not render them as benign as one might suspect from their use in adults.[67,68]

Even with local application one must be cautious. With the present problem of resistant Staphylococcus producing severe epidemics among our newborn population, one can be thankful that we all did not rush to accept the advice of the heralds of local penicillin prophylaxis.[69,70] The use of an antiseptic which has stood the test of time may be more conservative than the injudicious use of antibiotics for prophylactic procedures.[32-34,38,46,63,71-74] It has been suggested that those not in a position to experiment with new methods without endangering the eyes of the babies should be willing to go along with tested and proved methods.[33]

TABLE IX

Gonorrheal Ophthalmia Neonatorum

Columbia-Presbyterian Medical Center

Dates	Prophylaxis	Incidence	Per Cent
1932–3/57..	1% $AgNO_3$	8/75775	0.013
4/57–10/57.	None	4/ 1974	0.20
10/57–1960.	1% $AgNO_3$	4/ 9772	0.04

IS PROPHYLAXIS NECESSARY?

A more important problem than what prophylactic agent to use is the question of whether prophylaxis is necessary.[30,34,75-79]

Prophylaxis for What?

Much confusion has developed concerning the term ophthalmia neonatorum. Does it include all "sticky eyes," [28,80] or should it be restricted to those cases of gonorrheal etiology? What other agents cause ophthalmia neonatorum?[81,82] How dangerous is it? Certain things seem evident: one, the eyes of most newborns are sterile at birth;[46,51] two, positive cultures obtained from the eyes of newborns increase with time,[83] and resemble skin cultures at birth;[84] three, organisms other than N. gonorrhea recovered from discharging eyes do not appear to be different from those recovered from non-discharging eyes.[30,85] Therefore, does a positive culture other than that for N. gonorrhea represent a cause or only an association? Prophylaxis is mainly for gonorrheal ophthalmia neonatorum.

Is Rate of Risk Decreasing?

Recent reports indicate that this is not true.[86] Not only is the rate of gonorrhea rising, but also its incidence

among teenagers has been sharply increasing. Our modern therapeutic measures have been very effective and although recently the resistance to treatment has been reported clinically, laboratory evidence would indicate little change in the sensitivity of the organism.[87,88] Resistant strains, however, can be produced in the laboratory.[87] With no immunizing measures, no lasting immunity, short incubation period and involvement in the mystical realm of sexual custom, adequate treatment has not been sufficient.

Can We Detect the Infection and Treat the Mother?

Although this approach has been suggested,[89] in the 10 cases occurring at the Columbia-Presbyterian Medical Center from 1957 to the present the diagnosis in the mother has been made by culturing the ophthalmia in the babies and reporting back to the obstetrician. Those who work with this condition are well aware of its latent capacity, as was Credé, himself.[18,90-92] Table X indicates the findings of others. Tucker's material indicates maternal cervical cultures during pregnancy. He states that 10 of the 20 women who had positive cultures had no history or stigma of infection and that the puerperal course was not different from that of his control group. Tucker and Allen reported from Iowa, Davidson from Baltimore. Taggart used a routine urine culture technique and reported 6.8 per cent incidence on general out-patients in a Washington, D. C. municipal hospital.

TABLE X

Latent Gonococcal Infection

Reference	Date	Incidence	Per Cent
Maternal Cervical Cultures			
Tucker.....	1939	20/500	4.0
Allen.....	1949	8/531	1.5
Davidson...	1951	7/257	2.7
Female Urine Culture Technique			
Taggart.....	1955	—	6.8

How Effective Are Our Culture Techniques?

Primary cultivation of the gonococcus on laboratory media is difficult, not only because the organism is fastidious in its growth requirements, but also because it is exceedingly susceptible to the toxic effect of a variety of substances commonly present in ordinary media. The organisms grow best under aerobic conditions, and at a pH of 7.2 to 7.6 at a temperature of 35° to 36° C. Some strains do not grow satisfactorily at 37.5° C., and in general growth stops below 30° C. and above 38.5° C. Most strains require an atmosphere of two to 10 per cent CO_2 to initiate development. Spreaders readily overgrow the more slowly growing gonococcus.

Smears of exudate taken during the first four to five hours of penicillin therapy show gonococcal forms that progressively enlarge and decrease in staining ability until none can be detected. Similar morphologic changes are observed during chloramphenicol therapy.[93]

Van Slyke has shown that as the age of the infection advances the value of the smear decreases, while that of the culture increases.[94] The relative reliability of the two methods has been studied in incarcerated prostitutes. Specimen material was collected from each of 140 patients with clinical gonorrhea and positive clinical findings. Stain preparations were prepared

from each patient in triplicate, and the slides were examined by three experienced microscopists, who reported as positive only 88, 47 and 40 of the specimens, respectively. Although the culture method is more reliable, it has also distinct limitations as practiced at the present time. In three laboratories employing identical technical methods in testing samples of identical material complete agreement could be obtained in only 75 per cent of the patients known to be infected.

On the other hand, Thayer has shown that he was able to obtain oxidase positive colonies of various micro-organisms from 36 per cent of 548 normal uninfected women.[93] In 3.4 per cent of the cultures were saprophytic Neisseria, and in 12.6 per cent the organisms were morphologically and tinctorially so similar to the gonococcus that sugar fermentation tests were necessary to rule out this organism. We have had one case of ophthalmia neonatorum from which the organism was unclassifiable.

Mahoney has pointed out in this connection that in chronic gonorrhea cultural findings may spontaneously revert from positive to negative without any accompanying change in the clinical status of the infection. Furthermore, sporadic positive cultures may appear after a relatively long series of negative cultures.[91]

Many hospitals might have considerable difficulty in recognizing and defining this organism.

Will We Recognize Gonorrheal Ophthalmia Neonatorum?

Yes, if we see the full-blown infection and the baby is under observation. No, if we treat a minor discharge without proper smears and culture techniques, or the baby has been sent home. In the ten cases that we have observed at the Medical Center since 1957 only five were easily recognized in the nursery and treated. One was treated for a minor discharge that was thought to be of little consequence, but had a positive culture. Two children were sent home, one returning to us on the sixth day of life, and the other referred back to us from the local health clinic where it had been noted that the child had draining eyes. The child returned to us when it was approximately three weeks old. The two other children had been discharged from other hospitals in the city and came to us on the sixth day of life.

Is Reported Incidence Accurate?

The difficulty in obtaining accurate reporting has been well recognized.[33,49,93,95-97]

In 1957 the Columbia-Presbyterian Medical Center reported four of the twelve cases reported in the City of New York. These cases were brought to the attention of the Health Department by personal communication rather than routine reporting. It is difficult for me to believe that one-third of the gonorrheal ophthalmia occurring in the City of New York was concentrated in our nurseries. In four studies quoting reported figures for the City of New York for similar years there is considerable discrepancy.[26,57,61,98] Since one of the cases which came to us from another hospital had been a private patient, we are aware that ophthalmia neonatorum does occur among private patients. However, I am not so sure that a private physician is as eager to diag-

nose and report a gonorrheal infection among his private patients in this era of easy effective treatment.

It is very important to distinguish between reported incidence and observed incidence. The two terms should not be used interchangeably.

How Dangerous Is the Adequately Treated Case?

Rubella would appear to be a more important cause of blindness in preschool children than ophthalmia neonatorum.[99] In none of the 22 cases seen at the Columbia-Presbyterian Medical Center from 1932 to the present, have there been any known residual sequelae. In recent years we have been impressed with the rapid improvement of the condition once it is brought under appropriate therapy. The key to the problem is the availability of adequate treatment. If this were available for all cases the danger would be almost nil, and prophylaxis would not be necessary. However, in a situation of impersonal or indifferent medical care, and with a tendency toward shorter post partum hospitalization, it is possible that the responsibility for obtaining adequate medical treatment may be placed upon the mother.

A Public Health or An Individual Responsibility?

If the mother does not assume the responsibility of obtaining adequate treatment or is in a social circumstance where it may not be available, who, then, is responsible? In situations where we are prepared to say "the mother" I would suggest that all requirements for prophylaxis be removed. Until then responsibility must be assumed either by the health department, the local hospital, or the individual attending the delivery to provide prophylaxis or adequate follow-up to insure that ophthalmia neonatorum does not develop. We at the Medical Center desire further study before we abdicate our responsibility in this matter.

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GUIDANCE AND COUNSELING OF PARTIALLY SEEING CHILDREN

A panel of specialists discusses the methods used in helping these pupils get the maximum benefit from their education and from rehabilitation resources.*

Chairman

Helen Gibbons, consultant in education, National Society for the Prevention of Blindness

Participants

William M. Cruickshank, Ph.D., director, education for exceptional children, School of Education, Syracuse University

U. Alice Phillips, acting supervisor, Bureau for Education of Visually Handicapped, New York City Board of Education

Jack Mandel, teacher of sight conservation, Evander Childs High School, New York City

Mary J. Miller, resource teacher, Public Schools, West Hartford, Connecticut

Elizabeth Maloney, director of social service, Industrial Home for the Blind, Brooklyn, New York

Summarizer

Anne Kelley, teacher, Hillhouse High School, New Haven, Connecticut

MISS GIBBONS welcomed the conference delegates to the session and introduced Dr. Cruickshank who presented an appraisal of the role of the psychologist and the teacher in relation to the partially seeing child. Legally and sociologically, he said, the teacher is the king-pin; around the teacher the school program revolves. The community sees the school in terms of the teachers. The psychologist must focus on what he can find out about the child that will help the teacher handle him as one of a group. Psychological evaluations should be presented in clear, non-technical terms that will be understood by school personnel. Too often such reports are obscure, and for this reason are not implemented. The teacher is not a therapist. The psychologist should not give an IQ without an explanation, an interpretation of the child's mental age and the related strengths and weaknesses. The psychologist should tell the teacher what he sees in the clinical situation and what characteristics will be evident in the child. If the teacher knows what is wrong with the child psychologically the implementation of methods and curriculum will be facilitated.

Dr. Cruickshank described and demonstrated various simple tests that have been used successfully in determining the individual problems and potentialities of the partially seeing child. These tests are now in process of being published.

Supervisor's Responsibility

Mrs. Phillips outlined the supervisor's responsibility in the guidance and counseling of the partially seeing.

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York, April 14, 1961.

She stressed the meaning of supervision expressed by Kimball Wiles as "a service activity that exists to help teachers do their job better." The New York City Bureau for Education of Visually Handicapped is under the Division of Child Welfare. Mrs. Phillips has a liaison role, working through, the Bureau, school, home, community and various agencies. More than 1,300 children are registered in the Bureau's various programs for the visually limited. A counselor assigned specifically to these children also serves as an adviser to the supervisors and teachers.

The supervisor's responsibility for aiding the inexperienced teacher requires cooperation with school administrators. In interpreting and supporting the program the supervisor should meet the children in the classes for the blind and the partially seeing. Her specific suggestions for implementation should stress the importance of anecdotal records and the use of the many school resources. She should emphasize the importance of teacher cooperation with the school health team in order to develop understanding in the team of vision problems in relation to school adjustment. The amount of interest, effort and training demonstrated by each teacher and supervisor determines the amount of help each one is capable of giving.

Mrs. Phillips recommended in-service training and workshops to improve instruction. Remedial attention must be given to academic deficiencies. The teacher should show interest in her pupils, praise their success, and display sincerity in all relationships with them.

Mrs. Phillips emphasized the following points:

Supervisors are primarily teachers who are assigned to help fellow teachers attain the best education for our children.

Teamwork is the key to success in helping the partially seeing child.

An integrated program stresses the development of a sense of responsibility in the children through their work in research and on committee projects, and through sharing experiences with their normally seeing peers.

By working together, respecting each individual, we can lay the groundwork for a continuous, developing and growing guidance program. After all, guidance is not a special subject; it is an inseparable part of teaching; it pervades everything we do or say.

Elementary School Group

Mrs. Miller outlined the guidance and counseling program in relation to the elementary school age group. This actually begins with registration for kindergarten when pertinent information about each child is collected through parent conferences, physical examinations, disease census, preschool vision screening, speech and hearing screening, and observation and individual evaluation by the professional staff. Such information is recorded on each child's cumulative record card. Of particular importance are the conferences in which the teachers report to parents, their purpose being to meet the child's needs through the cooperative efforts of home and school.

If a problem goes beyond the scope of the classroom teacher, referrals to the proper service are made. The group of specialists includes psychologists, reading consultants, speech and hearing therapists, psychiatrists, and social workers. An orientation pro-

gram for the sixth graders helps them during the period of transition from elementary to junior high school. Mrs. Miller emphasized that this comprises the guidance services available to all public school children in the area.

The services needed by the partially seeing child are determined by periodic reports from the ophthalmologist and the combined thinking of the various specialists on the school's staff. If a pupil requires large print, heavily lined paper, special pencils, a book rack, or any other equipment the resource teacher sees that it is provided and instructs in its use. She requests preferential seating and aids in teaching the use of helpful mechanical devices such as the projection magnifier. Conferences with the classroom teacher are essential in guiding the partially seeing child so that the many skills required of all children on the elementary level are developed. Thus these children achieve their best academically, while they adjust to the limitations of their vision and become useful members of the community. Mrs. Miller concluded her report by stressing the role played by the National Society for the Prevention of Blindness, the local Lions Clubs, and other volunteer groups in bringing about a better understanding of the needs of the partially seeing.

At High School Level

Mr. Mandel pointed out that guidance of the partially seeing student in high school is a continuation of a process begun early in his school career. He is encouraged to discuss with his conservation teacher any educational or vocational problems that may arise. In the New York City schools there are certain counseling periods during the semester—at the beginning of the term, after each marking period, during any periods set aside for preparation of the following term's report cards, and during the week preceding regents examinations.

The first and second weeks of the term lend themselves very well to counseling, since this is a period of organization when schedules are subject to change and assignments are few. This is the time for checking the programs of the partially seeing to make sure that they have been set up properly. During these opening days good attendance and punctuality are stressed. The teacher discusses the maintenance of high scholastic standards and the requirements for graduation. Vocational guidance is given in the proper method of applying for a job, writing a résumé, and considering types of work. Later the pupils may be referred to the Division of Vocational Rehabilitation for further guidance toward their objectives. This is also an excellent time for instruction in eye hygiene. During the rest of the school year individual counseling is the rule. The teacher evaluates each student's academic record with him. Conferences with each subject teacher aid in analyzing strengths and weaknesses. About two months before the end of the term special teachers and grade advisers begin to help students choose their programs for the following term. Frequently at this time parents are asked to come in for consultation. Evaluation of the term just ending and plans for the future are discussed.

Mr. Mandel pointed out that although specific periods are allowed for counseling guidance is really a continuous process for the partially seeing. The special teacher has a wonder-

ful opportunity in daily contact with pupils to guide them in good study habits, organization of work, and personality development. Cooperation with the school nurse helps him keep the health records of his pupils up to date. Other personnel are important in guidance at the high school level: the placement counselor, the employment counselor assigned by the New York State Employment Service, and the guidance counselor assigned to the Bureau for the Education of Visually Handicapped. Mr. Mandel emphasized that a major part of the work of the special teacher is concerned with keeping the partially seeing students up to grade and helping them maintain the required scholastic standards.

Rehabilitation Resources

Miss Maloney opened her discussion by citing two typical examples of visually handicapped youngsters who receive aid from the rehabilitation services of the Industrial Home for the Blind. The services in relation to the individual, the family group, the school, and the community must be coordinated, she emphasized, if the child is to receive maximum benefits. Miss Maloney expressed the belief that the most important resource outside the family is the special teacher, who in order to meet her responsibilities must become rehabilitation-minded.

Early identification of vision problems is important if these children are to advance academically at the proper rate. Their school programs should be evaluated and re-evaluated; there must be careful diagnosis—medical, educational and social. Methods and materials are not always the key to progress in learning. Often family attitudes are responsible for successes or failures. The teacher must hold to the reality of school life by giving these children opportunities for success without rewarding them just for trying.

Miss Maloney emphasized the importance of early referrals for rehabilitation planning. Although most schools secure the services of vocational rehabilitation agencies for handicapped students, all too often these are sought only in the last year or two of high school. Today we know that preparation for many careers is started in junior high school, and we are aware of the increasingly complicated structure of high school and college planning. The last year of high school is frequently too late for obtaining the special knowledge about career possibilities that is available from rehabilitation counselors. It is wise to work out an arrangement for counseling at the earliest possible point.

Rehabilitation is not a service to be sought after the student's general education has been completed. It is an ongoing process shared in by child, school, family and community. If we can succeed in helping teachers become rehabilitation-minded from the very earliest school years, they will have a continuing awareness of strengths and weaknesses in pupils as they develop. Concurrently, there will be early recognition of problems and referral for appropriate services.

1962 NSPB CONFERENCE

April 11-13

Sheraton-Lincoln Hotel

Indianapolis, Indiana

Indiana Teacher Named for Winifred Hathaway Award

THE 1960 national Winifred Hathaway Award, honoring a teacher who is considered to be outstanding in her work with partially seeing children, has been given to Mildred R. Moon of Gary, Indiana. The presentation was made at the National Society's Annual Conference in New York on April 14.

Miss Moon, who has specialized in this field of education for the past 30 years, was chosen from among the nominees of 31 states. Last year she was named teacher of the year for the partially seeing in the State of Indiana. She directs this instruction program in grades one through 12 at Gary and has been a leader in numerous civic and professional organizations, including the Council for Exceptional Children.

Mildred R. Moon

In citing Miss Moon's achievements, President Enos Curtin of the National Society said:

"In addition to her personal daily contribution to the education of her pupils Miss Moon's conscientious planning for their welfare has involved her in local, state and national activities which have contributed significantly to making educational opportunities available to the partially seeing children throughout the country."

Miss Moon, a graduate of Geneva College, taught first grade in Ellwood City, Pennsylvania, before moving to Gary in 1930. She is president-elect of the Council for the Education of the Partially Seeing, a division of the Council for Exceptional Children; a past president of the Gary Classroom Teachers Association; former membership chairman of the Indiana Classroom Teachers Association; past division secretary of the Indiana State Teachers Association; a National Education Association convention delegate, and past president of Delta Kappa Gamma Sorority. In 1948, she was a member of the Indiana School Study Commission.

The Winifred Hathaway Award was established by the National Society in 1959 as a memorial to its late associate director, who is internationally known as a pioneer and leader in the field of education of partially seeing children.

NOTES AND COMMENT

• Our 30th Anniversary

This year marks the 30th anniversary of *Sight-Saving Review*. The first issue, published in March 1931, carried an editorial describing the need for an official journal to replace the *News Letter* that had previously served to interpret the National Society's program to "popular and technical groups."

"In our relentless war on blindness," states the editorial, "we are adding one more powerful machine, *The Sight-Saving Review*, to our ammunition. For sixteen years as a national organization, and before that for seven years as a state organization, we have tried to leave nothing undone to save sight and reduce the incidence of blindness. The undertaking of a quarterly magazine is a thoroughly considered project, coming as a result of several years of evaluation of the educational needs in the prevention of blindness movement."

Some facts reported in the first issue are of interest:

Ophthalmia neonatorum was responsible in 1928–1929 for 9.5 per cent of blindness among children entering U.S. schools for the blind (as compared to 0.1 in 1954–1955).

In 1930 there were approximately 5,000 children enrolled in 371 classes for the partially seeing in 22 states and 104 cities (as compared to the 1960 figures: a total of 8,600 children being served in 38 states, D.C. and Canal Zone, and in 261 cities and 46 counties. Of these 8,600 children, 6,850 are in 637 special classes or resource rooms and 1,760 are being served on the itinerant-teacher plan).

Trachoma was mentioned as a major problem in 1931. The U.S. Public Health Service was "establishing relief measures" and maintaining "a quarantine service to exclude immigrants afflicted with this disease." It was also engaged in epidemiological studies and laboratory research to determine the course.

At the close of the International Congress of Ophthalmology held in 1929 in Holland, an International Association for the Prevention of Blindness was organized with headquarters in Paris. The general aims were "similar to those of the National Society in this country."

The Leslie Dana Medal for 1929 was awarded to Hofrat Ernst Fuchs, eminent ophthalmologist of Vienna, the first time it was given outside the United States.

• Unique Newspaper

Since January 1960 a newspaper has been produced for blind and partially seeing persons. *The Seer*, bulletin of the Pennsylvania Association for the Blind, carries an interesting story on a unique service made available when *The New York Times* and Recording for the Blind joined forces. The culmination of this effort is a seven-inch pressed disc of "The News of the Week in Review" section of the *Times* Sunday edition.

The project requires efficient coordination, since the recordings must be in the mail on the Monday following. A proof of the 7,500 word news summary is delivered on Saturday night to the studios of Recording for the Blind where it is read by a trained

volunteer. The actual reading time is about 50 minutes, but the preparation, checking and correction extend the period to about two-and-one-half hours. The tape goes by courier to Connecticut that night for processing by CBS Laboratories and Columbia Records and the discs are mailed from Bridgeport the next day.

Ten volunteer readers have qualified for this recording after passing special reading tests. Two are professional TV announcers, and the others include a lawyer, an advertising executive, an airline executive, and a freelance writer. The quality of their reading has been highly praised by the subscribers.

These recordings are mailed to individuals throughout the world—Europe, South America and Asia. In addition, some 150 copies are sent free to 16 regional libraries serving the blind and partially seeing. A year's subscription is available to students for five dollars and to adults for ten. This is substantially below cost; the major expenses of the entire operation are paid for by grants from The New York Times Foundation and other foundations.

Recording for the Blind, Inc., 121 East 58th Street, New York 22, is primarily engaged in recording educational material for blind and partially seeing students. Its current catalogue lists some 2,900 books in every field of study.

• Vision Research Training

The first international scientific conference on training for research in the processes of vision will be held at the University of Rochester, August 13–19. Supported by a grant from the National Science Foundation, the conference will draw some 70 invited scientists from this country and abroad.

The *Journal of the American Medical Association*, reports that the conferees will discuss the desirability of providing a common elementary training for all scientists working in the field of vision; the possible status of vision study as a separate discipline; the improvement of communication among the various disciplines working in this field; and the application of specialized equipment and techniques on an interdisciplinary basis.

The planning committee for the conference includes Robert M. Boynton, Ph.D. and G. Richard Wendt, Ph.D., University of Rochester; Glenn A. Fry, Ph.D., Ohio State University; and Dr. Oscar W. Richards, American Optical Company.

HOWE LABORATORY REPORT

"While much of the world's attention is focused on outer space, encompassing a universe millions of miles in diameter, our attention is focused on a globe scarcely one inch in diameter. To those of us in ophthalmic research, this minute cosmos has wonders of construction and function every bit as challenging as the mysteries of outer space; with aberrations quite as important to understand and rectify as those involved, for instance, in keeping a missile on course; and with a research yield much more satisfying for the time and money spent on it than that resulting from the development of weapons."

This is the introduction to the 1960 report of the Howe Laboratory of Ophthalmology, Harvard Medical School at the Massachusetts Eye & Ear Infirmary. The report is the record of one year's attempt to learn more about the eye and its diseases, carried out by

a dedicated staff "at modest cost in comparison with today's research budgets."

The vertical applanation tonometer, devised by Dr. W. Morton Grant and described in last year's report, has been subjected to further testing. Normal and glaucomatous adults were examined with change in position from sitting to reclining, and the results were compared with those of Schiøtz tonometry and tonography on the same patients. It appears that change in intraocular pressure with change in position is not the same in all patients, indicating a need for closer examination of the influence of vascular pressures on intraocular pressure and of the relationship of applanation measurements to Schiøtz tonometry.

Donations from the Lions Clubs of Massachusetts, the Public Health Service, the Infirmary and private sources facilitated the construction of additional space on the roof of the Laboratory's outpatient building. At present it serves for studies on lipid chemistry, neurophysiology and corneal transplantation. In the future it will provide accommodations for an expanded program of research training.

An electron microscope was acquired at the Laboratory and was put into operation at the end of the year.

DEFICIENCY IN COLOR PERCEPTION WARRANTS PEACETIME REJECTION

According to *A MA News*, Department of the Army officials have reported that persons deficient in color perception will be drafted into the armed services in the event of total or partial mobilization. However, they will continue to be rejected during peacetime.

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AROUND THE WORLD

LIBYA

Control Teams at Work. In one small area of Libya 30 per cent of the people have eye pathologies, primarily trachoma, and in another area 80 per cent of the elementary school children have eye infections.

Hildrus A. Poindexter, M.D., chief, health and sanitation division, U.S. Operations Mission, Libya states in *Public Health Reports* for January that trachoma control teams are emphasizing health information and treatment among school children. Approximately 69 schools receive control services and nearly 26,000 students have been treated for trachoma and other eye infections.

In one month a control team visited seven schools and treated 868 of the 2,556 students examined. At the eye clinics at Zavia and Suh El Giuma they examined 153 persons, treated 124, and performed 27 operations for trachoma sequelae.

SOUTH AFRICA

New Trachoma Trial. A large-scale experiment with a new treatment for trachoma is being conducted by the South African National Council for the Blind in the North-Western Transvaal where the disease is prevalent, reports the *Newsletter* of the Council. A team of three ophthalmic surgeons are dispensing sulfur drug pills to be taken in conjunction with eye ointments. In a six-month period they expect to examine and treat about 60,000 children.

The Council's experiments in the area started about five years ago. Past visits to treat new cases and reexamine old ones revealed that about 70 per cent of them have been cured by the ointments within a six-month period, and about 10 per cent were improving. The remaining 20 per cent did not respond to the treatment.

Further research has shown that the stubborn cases were responding to treatment with sulfur drugs taken orally. The best results were obtained when this treatment and the application of the ointments were combined. The latest trial is being launched in the hope that it will cure practically all trachoma cases.

Bequest to Aid Eye Research. The South African National Council for the Blind is the beneficiary of $145,600 willed by Johannes Goosens, a South African businessman, for the establishment of an eye bank in Port Elizabeth and for research work in eye disease, reports the *Newsletter* of the Council.

This generous gift will probably facilitate the establishment of an eye research foundation in South Africa.

List of Eye Hazards. The Pretoria Civilian Blind Society, in a warning about accidental eye injuries, has published a list of objects that have caused blindness. In relation to children the objects are berries, forks, arrows, dry ice, indelible pencils, nibs, wire, tennis balls, soil, catapults, lime, nails, knives, twigs, golf balls and gunpowder. In adults they are tennis balls, watermelon peel, steel, wire, wood splinters, lime, an elbow, molten lead, whips, elastic, thorns, catapults, copper, horns of oxen, air guns and sinkers on fishing lines. The Society is conducting a campaign to reduce these tragic injuries.

SUDAN

Vitamin Deficiencies Affect the Eyes. A survey was conducted by Mekki El Sheikh in the Blue Nile Province, Sudan to determine the ocular manifestations of vitamin deficiency, reports the *British Journal of Ophthalmology*. Multiple avitaminosis was discovered in 85 per cent of the 1,265 patients examined. Most of them were children.

Vitamin A deficiency occurred in 56 per cent of the patients. The ocular features were xerophthalmia, keratomalacia and night blindness. The vitamin B deficient group, 24 per cent of the total, exhibited the ocular symptoms of mild kerato-conjunctival lesions, smarting, photophobia, and night blindness. Conjunctival and orbital hemorrhages were the main ocular features in the five per cent deficient in vitamin C.

No ocular changes due to vitamin D deficiency were discovered.

SOVIET UNION

Ophthalmic Mission. The World Federation of Neurology and the National Institutes of Health recently sponsored an ophthalmic mission to Russia. The three-man group comprised Dr. Algernon Reese, representing clinical ophthalmology, Dr. V. Everett Kinsey, representing ophthalmic research, and Dr. Sylvan Brandon, translator. Editorial comment on this mission by Dr. David G. Cogan appears in the *A.M.A. Archives of Ophthalmology* for March.

"Their report emphasizes," he states, "the unalterable adherence to ritual, the backwardness of most diagnostic and therapeutic measures, the almost complete lack of conjugation of clinical and research facilities, but withal an exhilarating purposiveness of the Russian people.

"It was a surprise to learn that some of the leading ophthalmic institutions were treating retinal degenerations with injections of solutions of mud from the Black Sea or, alternatively, with extracts of the century plant or with extracts of the scrotal skin of bullocks, all packaged and distributed by government supply houses." However, Dr. Cogan observes parenthetically, "some of our less picturesque medicaments for treating retinal degenerations may have little more scientific basis to recommend them."

Surgical methods were found to be those of the prewar type. Cataract surgery was performed with threaded needles; glaucoma surgery was almost entirely the trephine operation. Although the Russians are well informed on Western ophthalmic literature, they have adopted few of the methods which the West has found advantageous.

The clinical departments seen by the group were headed chiefly by women. This is in keeping with the prevalence of women in clinical medicine and, to a lesser extent, in the research departments.

EYEWEAR FOR AIRLINE HOSTESSES

A recent survey of nine major airlines made by George P. Elmstrom of El Segundo, California is reported in the *Journal of the American Optometric Association*. It reveals that only two lines accept hostesses who wear eyeglasses, while five accept contact lens wearers. Some companies require the contact lenses to have been worn a minimum of six months, others require a full year of previous wear.

CURRENT ARTICLES

Glaucoma in the Central and South Pacific. W. J. Holmes. *American Journal of Ophthalmology.* Vol. 51, p. 253. February 1961.

Reports and surveys from various Central and South Pacific areas indicate that primary glaucoma is rare among the native, pigmented populations. The disease does not pose a public health problem, nor are there laws concerning its control. In light of this "resistance" to glaucoma, the factors of age, heredity, blood groups, climates and cultures of these areas offer potentially promising clues regarding the epidemiology of the disease.

Further regional and international collaboration regarding glaucoma appears highly desirable. The value of such cooperation was realized at the XVIII International Congress of Ophthalmology when a group of eye surgeons organized an International Society for the Study of Glaucoma.

Goniopuncture: An Evaluation After Eleven Years. H. G. Scheie. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 38. January 1961.

This paper summarizes the author's experience with goniopuncture in operating on eyes for juvenile and infantile glaucoma since the procedure was originated in 1949.

Thirty-five eyes with juvenile glaucoma were operated on by this method. The results were encouraging. The tension was normalized in 19 eyes (57 per cent) by one or more goniopunctures. No late complications have occurred. However, it is too early to determine whether or not late closure of the fistula may take place.

Goniotomy was done as a primary procedure on 21 eyes with infantile glaucoma and successfully controlled the pressure in 13 eyes (62 per cent). Goniopuncture was done as a primary procedure on 52 eyes with control of pressure resulting in 27 (52 per cent). Results were better when the two operations were combined into a single procedure. This was done on 153 eyes with control of pressure in 117 (76 per cent). This operation is easily performed and was accompanied by no more complications than with either operation alone.

Goniopuncture is ineffective in treating glaucoma in patients over 30 years of age. This is probably due to a reduction in elasticity of the corneoscleral tissues with age.

The Technique and Organization of Mass Screening for Glaucoma. W. Leydhecker. *American Journal of Ophthalmology.* Vol. 51, p. 248. February 1961.

The author, who is associated with University Eye Clinic, Bonn, Germany, was responsible for the first mass screening for glaucoma in Europe, four years ago. He describes the project in detail, including the necessary facilities, instruments, staff and costs.

Tonometry was performed with a standardized Schiøtz tonometer on 10,000 workers in factories and large offices. Suspects with a tension of more than 20 mm. Hg (the number is not reported) were invited to have a complete clinical examination, which included: slitlamp examination, gonioscopy, funduscopy, visual acuity,

perimetry, tonometry, and tonography. Some patients were hospitalized, tension was measured at different hours of the day and night over several days, and provocative tests were performed.

The incidence of simple glaucoma (including two patients with pigmentary glaucoma) after the age of 40 years was 2.3 per cent and corresponded closely to the frequency found in the United States.

Glaucoma in the Younger Age Groups. E. S. Perkins. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 882. December 1960.

Analysis of a large series of cases of open angle glaucoma showed that there is a group of patients with an age of onset between 30 and 50 years whose characteristics differ from the usual type of senile open angle glaucoma. These include a predominance of males to females in the ratio of 7:3, a high incidence of myopia, and a high incidence of pigmentation of the trabeculae.

From a study of the clinical features of a series of these patients it is concluded that they represent a syndrome consisting of a developmental defect in the outflow channels which is found most commonly in myopic males, and that the pigmentation, although possibly contributing to the obstruction to outflow, is not the primary cause of glaucoma.

Reduction of Intraocular Pressure Using Plastics in Surgery. R. A. Ellis. *American Journal of Ophthalmology.* Vol. 50, p. 733. November 1960.

A preliminary study was conducted to verify previous reports concerning the inertness and low toxicity of silicone rubber.

Silicone rubber tubing was implanted in 40 rabbits' eyes for the surgical treatment of glaucoma. Movement of the tube occurred after two to four months in 20 cases, probably because of the nonadhesive quality of this plastic material and the slow healing of the sclera.

Future research will be directed to eliminating this problem by using a tube composed of silicone rubber at one end and Dacron at the other end. Even if successful, the author cautions, this surgery should be limited only to glaucoma cases in which all other medical and surgical treatment has failed.

Glaucoma, 1959–1960. H. I. McGarry. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 951. December 1960.

In her annual review of the glaucoma literature the author refers to 239 books and articles which cover fields of study and research conducted during the year ending July 1960.

Much was written during the year on tonometry and tonography. Tonography is advocated as a more accurate method, especially in the early diagnosis of simple glaucoma. Ocular rigidity as a problem was covered by a number of authors. There was emphasis on the diagnostic value of perimetry.

Progress continues to be made in the medical and surgical treatment of the disease. A symposium on the office management of the glaucomas brought out some practical points in the medical treatment. The need for a special glaucoma department in a general eye clinic is urged by a few authors.

It is recommended that the early signs of the disease and its seriousness be taught to the general physician,

and that the patient himself be alerted to the importance of keeping under observation through life.

Incidence of Glaucoma in Various Ethnic Groups in the Population of Israel. J. Landau and H. S. Halevi. *British Journal of Ophthalmology.* Vol. 44, p. 751. December 1960.

Four hundred patients hospitalized for glaucoma during a two-year period were included in this study. They were divided into two ethnic groups—European Jews and Oriental Jews.

The incidence of hospitalized glaucoma was 6.3 per 10,000 of population over age 40 among Europeans and 8.8 among orientals. No constant trend was found in regard to sex in either ethnic group.

Since only hospitalized cases were included in the study, it does not present a comprehensive picture of the prevalence of glaucoma in the total Jewish population of Israel.

Clinical Application of Tonography and Diurnal Variation in Ocular Tension to Evaluation of Glaucoma Operations. F. Kandori and Y. Kurose. *American Journal of Ophthalmology.* Vol. 50, p. 430. September 1960.

The tonographic findings and diurnal variations in ocular tension before and after operation are reported in 11 cases of chronic simple glaucoma, 14 congestive, five secondary and three aphakic. The methods used were cyclodialysis, trephination, Wheeler's operation, intracapsular lens extraction and anterior sclerotomy.

The facility of outflow was improved with operation in all types of glaucoma but differed in duration and degree of restoration. Trephination and Wheeler's operation produced the greatest increase in outflow facility. The effect of operation was greatest in chronic congestive glaucoma.

In the series there were many cases in which the diurnal variation in ocular tension diminished with operation.

If no improvement appeared after the first operation a second might be recommended. However, in spite of reoperation a few eyes could not be improved or soon became worse after improvement in the ocular tension, its diurnal variation and facility of outflow. These were probably cases of so-called malignant glaucoma.

Glaucoma—A New Challenge to Occupational Medicine. E. J. Ryan. *Archives of Environmental Health.* Vol. 1, p. 278. September 1960.

Since July 1958 routine tonometry has been included in the annual physical examination of practically all employees at the du Pont Company's plant in Belle, West Virginia at the urging of a local ophthalmologist. Of approximately 3,000 employees of all ages screened during the first 18 months, 41 are under specific treatment for chronic glaucoma. The plant's registered nurses gave the tests.

The author, a member of the plant's medical staff, states that the next decade will probably see most of the working population of this country in contact with some phase of occupational medicine. It is, therefore, conceivable that early detection of glaucoma through routine screening programs could reduce by 50 per cent the blindness that would otherwise result from the disease. The awareness of glaucoma by employees and the education of their families could possibly further reduce its incidence by another 20 to 25 per cent.

Results in 39 Bilateral Ridley Intra-Ocular Implants. W. S. Reese. *British Journal of Ophthalmology.* Vol. 44, p. 713. December 1960.

Ridley intra-ocular implants were inserted in 78 eyes. In one eye the operation was not completed because loss of vitreous necessitated a change to a conventional extraction. Glaucoma occurred in five eyes, iris prolapse in five, retinal detachment in one, pupillary occlusion in five, and in three instances the acrylic lens had to be removed because of overdilation of the pupil.

The average corrected distance vision of the eyes with 20/200 or better was 20/24. In general, the visual acuity improved remarkably over a period of months or even years.

The author states that current opinion on this new procedure is still unfavorable. The operation is a difficult one and post-operative care is demanding. The main obstacle to the more frequent use of this method is the severe post-operative reaction which is seen in a small percentage of cases.

An erisophake type of instrument that is being developed may not only facilitate the lens implantation and thus reduce post-operative reaction, but may also help to position the lens more accurately.

A Controlled Study with Triclobisonium Chloride. R. U. Stern, W. T. Rados, J. Insabella, H. Gambacorta, H. Moskowitz and N. Otazo. *American Journal of Ophthalmology.* Vol. 50, p. 595. October 1960.

Triclobisonium chloride was successfully used in the treatment of experimentally produced staphylococcal corneal ulcers, and was also effective in preventing them. The medication did not adversely affect the rate of corneal re-epithelization, nor did it penetrate the intact cornea, but was found in significant levels in the aqueous humor when the cornea was abraded.

The drug was effective in 94 per cent of the 120 ocular infections treated in the clinical study. It was generally nonirritating with no apparent side-effects.

Cornea and Sclera. (Annual Review.) C. I. Thomas. *A.M.A. Archives of Ophthalmology.* Vol. 65, p. 243. February 1961.

Articles which appeared from September 1959 to September 1960 are reviewed. It is evident from the clinical reports and experimental studies that the cornea is a subject of keen interest to ophthalmologists throughout the world.

The literature of this period placed major emphasis on surgical treatment, particularly on keratoplasty. Experimental studies were numerous, especially with respect to preservation of material for grafting. Much was written on the medical treatment of chemical burns, and the treatment of corneal infections with antibiotics and corticosteroids.

A complete analysis of the general problem of corneal contact lenses in ophthalmology was presented by Agatston, Barnert and Feldstein. It was recommended that since these lenses are in such common use today, it is the ophthalmologist's duty to be well aware of the problems involved and that he should be equipped to handle them satisfactorily.

Experimental studies revealed that surgery is the treatment of choice for

scleral rupture. A rare observation of corneoblastoma with orbital propagation was published. A congenital eye defect in collie dogs was reported to be strikingly similar to progressive axial myopia in man.

An extensive bibliography is included in this annual review.

Intra-Corneal Lamellar Keratoplasty. T. Krwawicz. *British Journal of Ophthalmology.* Vol. 44, p. 629. October 1960.

A new operative technique of lamellar keratoplasty has been performed in six cases of corneal opacity affecting the superficial and deeper layers of the corneal stroma.

By the new procedure the graft is introduced into a pocket, the walls of which are formed by the scar tissue in front, and by the deeper layers of the corneal stroma behind. The scar, which forms the anterior wall of the pocket, gives temporary protection to the graft and is removed when the union between the graft and the host cornea has been established. No sutures are needed to fix the graft, as its position inside the corneal pocket is perfectly stable.

In five cases the post-operative course was uneventful, the transplant preserved its clarity, and the vision was improved. In one patient an opacity was visible under the clear transplant, but there was some visual gain. In another patient the graft was partially opaque and the vision remained unimproved.

The author states that the new method eliminates the risk of failure due to faulty apposition of the graft following the bulging of Descemet's membrane; it minimizes or eliminates the danger of dislodging of the transplant, simplifies the operative technique by avoiding suturing, and decreases the operative trauma.

Experimental Corneal Allergy. E. Nelken, I. C. Michaelson, D. Nelken and J. Gurevitch. *American Journal of Ophthalmology.* Vol. 50, p. 583. October 1960.

To determine the relationship between serum antibody titer and corneal changes rabbits were injected intracorneally with various amounts of foreign proteins. The clinical reaction expressed itself in three stages: by injection of the limbal blood vessels and iritis; by corneal haze; and by the ring opacity in the cornea and the vascularization which became rapidly fainter, leaving behind a dotted opacity in the form of a triangle or quadrangle.

A very clear parallelism was found to exist between the rise in the serum antibody titer and the appearance of the corneal changes.

Acute Complications from Present Day Corneal Contact Lenses. R. K. Lansche and R. C. Lee. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 275. August 1960.

Emergency treatment was required for 14 patients with acute complications caused by corneal contact lenses on 18 occasions during a period of a year and a half at either of two U.S. Army hospitals in Southern Germany. Three patients had sustained ocular injuries on more than one occasion and four patients required hospitalization for periods up to 60 hours.

The offending lenses comprised three brands obtained from five non-medical technicians. They were fitted

without initial medical consultation and without subsequent medical supervision. Complications observed were punctate central keratitis, confluent superficial erosion, and full-thickness epithelial abrasions. Conjunctival infection coexisted with corneal abrasions on two occasions. Every patient in this series regained the best vision that existed prior to injury and the maximum time required to obtain comfortable eyes and smooth re-epithelization was 60 hours. Permanent corneal scars or damage did not occur.

Pertinent literature was reviewed for similar cases and additional types of complications not encounted in this study. In one case reported a patient who developed bilateral ulcer of the cornea with hypopyon not only lost the vision in each eye but also his sanity and very nearly his life as a result of wearing the lenses constantly for five days and nights.

The most frequent causes of corneal damage produced by contact lenses are apical touch, strangulation, foreign material under the lens, and infection of an abrasion.

Suggestions are offered which would prevent serious complications from contact lenses in the future.

Allergy and Contact Lenses. B. T. Fein. *Texas State Journal of Medicine.* Vol. 56, p. 665. August 1960.

The hay fever symptoms of three out of five patients were relieved by injections, yet they were unable to wear contact lenses without eye symptoms in spite of local, oral and allergy therapy.

Two patients with severe symptoms were not affected by the conjunctivitis associated with hay fever and were able to wear the lenses six to eight hours daily in spite of increased lacrimation and nasal obstruction.

Apparently Trivial Wounds of the Eyelids With Intracranial Damage. A. N. Guthkelch. *British Medical Journal.* No. 5202, p. 842. Sept. 17, 1960.

The penetrating wound of the roof of the orbit appears to be particularly common in children. However, early diagnosis of this type of cranial injury is exceptional. The course and outcome of six such cases are reported. In five of the cases it was known that the injury had been sustained from a sharp object. Wounds in the region of the orbit in which there is any suspicion of a sharp object, and particularly where the victim is a child, must be taken seriously.

Despite the absence of any history of loss of consciousness or other neurological disturbance, immediate x-ray examination of the skull, with special reference to the roof of the orbit, should be made. If the cranium has been penetrated, early and complete exploration is imperative.

Racial Differences in Visual Acuity. B. D. Karpinos. *Public Health Reports.* Vol. 75, p. 1045. November 1960.

The medical reports of 273,000 registrants examined for military service during a 21-month period were used in the study. The analysis was carried out by race involving some 222,000 medical reports of white examinees and 51,000 reports of Negro examinees. The mean age of the white examinees was 21.8 years and that of the Negro was 21.6 years.

The data indicated better vision for the Negro examinees. Eighty-two per cent of them had 20/20 uncorrected bilateral vision, as compared with 69 per cent of the white examinees. However, the probabilities of correctibility of poorer to better vision were lower for the Negro. Sixty per cent of the white youths having uncorrected distance vision of 20/100 could have their vision corrected to as high as 20/20, while the corresponding percentage for the Negro youths was 49.

It has not been determined whether these racial differences in visual acuity are genetic in origin, or are the result of later environmental development, or both.

Peripatetic Intraocular Foreign Body. B. Crawford. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 392. September 1960.

A nonmagnetic foreign body was retained in the posterior segment of the eye, an unfavorable position for direct removal. Thirteen weeks following the injury the brassy fragment moved from behind the lens through the pupil into the angle of the anterior chamber and was removed.

The Value of Emphasis in Eliminating Errors. A Controlled Study in Teaching. B. G. Adams, E. E. Daniel, A. Herxheimer and M. Weatherall. *British Medical Journal.* No. 5204, p. 1007. October 1, 1960.

The value of emphasizing common errors was examined by a controlled experiment. A short-answer test containing 24 questions believed to concern a common source of confusion was given to a group of pharmacology students. Topics of the questions were paired according to the frequency with which misconceptions appeared in the students' answers. One topic of each pair was allotted to a treated and one to a control group. For the next four months all teachers emphasized the desirability of avoiding errors in the treated group while drawing no special attention to those in the control group. The approximate number of student exposures to each topic was recorded.

At the end of the course the short-answer test was issued again. On this occasion the number of misconceptions in both groups was reduced, but significantly more so in the treated group where the errors had been emphasized. The best learners repudiated the misconceptions readily.

The same objective principles can be applied profitably to the critical study of medical teaching as to therapeutic methods.

Natural Selection and the Origin and Evolution of Weeping in Man. A. Montagu. *Journal of the American Medical Association.* Vol. 174, p. 392. September 24, 1960.

Weeping has several physiologically important and adaptively valuable functions. It is a protective device against potentially noxious organisms. Tears contain sugar and protein which are nutritional both to the eyes and the paranasal and nasal mucous membranes.

The lacrimal system is capable of functioning at birth. However, the human infant must wait for a more central nervous development before it becomes capable of emotional tears. During the early nonfunctional lacrimal period lubrication of the eyes probably occurs from the secretions of

the tiny conjunctival mucous glands, and perhaps also from the tiny accessory lacrimal glands in the conjunctival fornices.

Modern Therapy of Sympathetic Ophthalmia. T. A. Makley, Jr. and J. E. Leibold. *A.M.A. Archives of Ophthalmology.* Vol. 64, p. 809. December 1960.

Experience gained from reviewing 48 cases of sympathetic ophthalmia during the past 10 years, and four recent cases provide a basis for an effective therapeutic formula. A favorable outcome was obtained in 38 cases.

Early diagnosis, enucleation of the exciting eye if it is blind, adequate mydriasis, prompt and adequate steroid therapy and careful follow-up are stressed.

The Deaf-Blind in the United States; Their Care, Education and Guidance. D. J. Burns and G. M. Stenquist. *Rehabilitation Literature.* Vol. 21, p. 334. November 1960.

The public is increasingly recognizing the problems concerning the deaf-blind, a segment of society small in size but needing many services. Education is being undertaken with more confidence and better knowledge of methodology; diagnostic, medical, and psychological aspects are being investigated; guidance and rehabilitation are augmenting the self-respect, independence, and economic status of adults in this group.

Services for deaf-blind children and adults are in varying stages of development, and the people providing them are constantly seeking improved technics in the effort to bring about equality of opportunity and the fullest possible participation of the individual in society.

Multiple Checkerboard Targets for Testing Visual Acuity. I. Schwartz, S. M. Luria. *Armed Forces Medical Journal.* Vol. 11, p. 1217. October 1960.

The apparatus described is said to be less influenced than are most acuity measures by such variables as form, brightness, configuration and literacy. Presenting five checkerboard targets simultaneously it circumvents memorization by the subjects. It also makes the test easy to administer, and reduces the subjects' waiting time between target exposures.

The targets can be used in various ways. Possible applications include simple pass-fail examinations and determination of limens. It is expected that the device will be useful for screening large numbers of subjects and for research purposes.

Newer Methods of Teaching Reading to the Partially Seeing Child. E. Cohoe. *Exceptional Children.* p. 11. September 1960.

The partially seeing child's teachers and the equipment at their disposal largely determine whether the child will learn to read up to his potentialities.

The four important factors in the reading program for the partially seeing child include: establishing reading readiness before introducing the beginner to systematic instruction in reading; providing procedures and materials to make the act of reading easier; emphasizing thinking while reading with a view to encouraging a clear grasp of the author's meaning, and encouraging insight and reaction to what is read; and relating reading to the other language arts.

Absorbable Gelatin Film (Gelfilm) in Ophthalmic Surgery. G. S. Zugsmith. *American Journal of Ophthalmology.* Vol. 50, p. 729. November 1960.

Gelfilm is reported to be a relatively nonantigenic, nonpyrogenic and absorbable substance for extraocular use. It is valuable in creating a subconjunctival space and preventing adhesions. The experience of several investigators suggests that intraocular use should be performed with caution.

Two new applications of the material in ophthalmic surgery are described: in prevention of reformation of the ducts following the operation for the relief of epiphora; and the insertion of a small strip of Gelfilm to prevent recurrence of pterygium when removed by two different techniques.

Examination of Lenses of Steroid-Treated Rats. L. von Sallmann, L. L. Caravaggio, E. M. Collins and K. Weaver. *American Journal of Ophthalmology.* Vol. 50, p. 1147. December 1960.

Thirty-five Sprague-Dawley rats were included in this study. For 16 weeks three animals of each litter of five received daily subcutaneous injections of Decadron in doses of five, 10 and 20 mcg. per 100 gm. body weight, while the remaining two were injected with similar volumes of the solvent. In five animals 20 mcg. per 100 gm. of the steroid were fed by stomach-tube.

The steroid-treated rats grew at a considerably slower rate than their littermate controls. The most severely affected animals were those receiving the high doses of Decadron. In some animals there was a transient slight elevation of the blood sugar level.

The lenses of these animals were studied biomicroscopically, histologically and cytologically. They remained clear, and light microscopic examination did not suggest an induced injurious effect on the cellular elements of the lens.

Light Coagulation in Retinal Detachment Surgery. J. F. Nowell and G. M. Haik. *The Journal of the Louisiana State Medical Society.* Vol. 112, p. 354. September 1960.

A light coagulator designed to use high intensity visible light to fuse the retina and choroid in minute circumscribed scars is reported to be a clinically valuable adjunct to retinal detachment therapy. Several other uses are becoming manifest in the treatment of intraocular tumors, chorioretinitis, certain skin lesions, and in performing optical iridotomy.

The principle is that of the burning glass used to focus the sun's rays to ignite wood. The source of light in this apparatus is an electric arc enclosed in a quartz tube containing xenon gas under high pressure. This light is passed through an optical system of lenses and emerges via an ophthalmoscope mirror. The operator can direct a filtered portion of the beam into the patient's eye, and when it is accurately placed on the fundus he can switch on the full beam for a fraction of a second. The normal refractive power of the eye focuses the light on the retina, and a minute chorioretinal burn is produced. Several applications will seal off the area under treatment.

The treatment is usually carried out under local anesthesia. The absence of any surgical cutting, the accuracy, and the precise control of the method make it useful in selected cases.

BOOKS AND PAMPHLETS

The Structure of the Eye. George K. Smelser, Editor. Academic Press, New York. 1961. 570 p. $8.00.

During the Seventh International Congress of Anatomists held in New York in April 1960 a symposium on ocular anatomy was a part of its activities. Fifty internationally known scientists from many parts of the world took part. They discussed some of the minute anatomical structures of the eye as revealed by the electron microscope, genetic and biochemical studies. Their papers were collected and most ably edited by George K. Smelser of the department of ophthalmology, College of Physicians and Surgeons, Columbia University, New York. The proceedings have been published, undoubtedly at enormous expense, by Academic Press, in a very handsome volume, beautifully printed and illustrated. Those who know anything about the printing of illustrations of electron microscopy realize what a superb job was accomplished here, supported and subsidized by Government and private agencies, among them the National Society for the Prevention of Blindness.

The papers open a whole new world of ocular anatomy to us. It is like going into space. Indeed some of the illustrations, for example those pertaining to retinal cells, suggest in shape and complexity something of the anatomy of space ships and rockets. The information completely revolutionizes our knowledge of ocular anatomy, genetics and physiology. A new world of investigation is opened up, especially to our younger men. It is a world of infinite variety and opportunity for abundant and fruitful harvests, in a field that we thought had been thoroughly raked over and completely gleaned. How wrong we were.

The contributors, working in separate areas and disciplines, often unaware of what was going on elsewhere, by coming together in this symposium have lost their isolation for the time being and each of them, and certainly each of us on the outside, is enormously enriched.

We "outsiders" are most grateful to these workers and particularly for the various agencies who have made the symposium and the publication of its proceedings available to us. No ophthalmologist clinical or experimental can bear to be without this handsome classic.

DERRICK VAIL

The Nation and Its Older People. Report of the White House Conference on Aging. January 9–12, 1961. U.S. Department of Health, Education, and Welfare. Government Printing Office, Washington, D.C. 334 p. $1.25.

More than 2,500 delegates, representing 53 states and territories and some 300 national voluntary organizations interested or acting in the field of aging, attended this conference last January. The report sets forth the plan of organization, the conclusions reached, the agreements arrived at, and the courses of action that were determined to be necessary and feasible.

Three factors—broad popular representation, complete coverage of the subject matter, and an intensive con-

sideration of specifics—determined the pattern and character of the conference. The 20 subject-matter areas into which it was divided were subdivided even further to facilitate examination and discussion by some 140 workgroups. The findings of the workgroups went forward for consideration and collation at the section level. After being voted upon by the entire section the results were presented to the group for consideration and elimination of overlapping. The final stage was the presentation of policy statements to the plenary sessions.

Dr. John W. Ferree, executive director of the National Society for the Prevention of Blindness, participated in the conference as a member of the Section on Sensory Changes and Consequences. The discussions there centered on such problems as quantitative measures of physiologic aging, development of more precise information concerning the point of failure in each sensory system, and the factors which may determine the rate of decline. New methods for preventing or retarding such decline were considered.

The Policy Statement and Recommendations of the Section on Health and Medical Care in the report includes the following on "Visual Loss Among the Aging and the Aged":

1. It was the consensus that to promote the well-being of persons suffering visual loss and maintain their integration as members of society, there are available a very considerable array of valid processes. These are under legitimate disciplines which require support and promotion from society, the professions, legislatures, and executives in Government as well as private organizations. These processes consist of two major kinds—(a) means of sight preservation and restoration, including visual aids; and (b) means of self-management as blind individuals. For the first of these the combined talents of medicine, optometry, and social work require special facilities and training under the aegis of properly constituted public health programs. For the second, resources of rehabilitation are required, particularly skills in self-management as developed in rehabilitation centers for the blind, as well as the liberal use of such motivation measures as reader and guide services. With due respect for research possibilities, it was clear that pragmatically sanctioned treatment and care as developed in various existing programs for the blind can be serviceable to the aged population, if expanded. With respect to the possibilities of study and research, the need to learn more about the true function of work, leisure, and recreation in the lives of aging persons appears of paramount importance since the conventional is extremely rigid in this important area and, therefore, requires the most searching reexamination under present-day conditions.

2. It is essential that in any program of health care, Congress should consider broad aspects of rehabilitation. The group unanimously favored a program of rehabilitation for self-care (independent living) with proper safeguards.

The most discussed problem at the Conference cut across the areas of income and medical care—namely, that of how to meet the costs of the increased need for health and medical services in the later years of life. Delegates strongly urged the extension of preventive services, and health and rehabilitation facilities of all sorts.

Night Vision. Gaetan E. Jayle, Albert G. Ourgaud, L. F. Baisinger, M.D., William John Holmes, M.D. Charles C Thomas, Springfield, Illinois. 1959. 408 p. $13.50.

In his introduction to this monograph Sir Stewart Duke-Elder characterizes the subject of night vision as

"difficult, vague and chaotic, weighed down with theories and complicated by experimental work wherein different investigators have elaborated a multiplicity of instruments which measure, in a somewhat indiscriminate and often irresponsible manner, several different functions." It is gratifying, in his opinion, to have available in this unique text a critical assessment and an integrative judgment on a multitude of incompatible theories; an invaluable source of information and a guide for the ophthalmologist and the physiologist.

The monograph was originally written by Drs. Jayle and Ourgaud of the French Ophthalmological Society and has been condensed and translated by Drs. Baisinger and Holmes.

Among the subjects reviewed are general characteristics of night light; biochemical data; retinal changes in illumination and darkness; photopic and scotopic electroretinograms; subjective features, physiological and pathological variations, and techniques of examination of night vision.

The text will be of value not only to physicians but also to engineers, aviators, physicists and research personnel.

Clinical Methods of Neuro-Ophthalmologic Examination. Second Edition. Alfred Kestenbaum, M.D. Grune & Stratton, New York. 1961. 578 p. $16.75.

Substantial additions have been made to the first edition of this standard text, published in 1946. It is intended primarily to present a review of the clinical methods of ophthalmological examination that may be helpful in neurologic differential diagnosis. Various sections deal with neuro-ophthalmic anatomy, field of vision, pathology of the optic nerve, chiasmal lesions, extrinsic eye muscle palsy, gaze movements, nystagmus convergence and divergence disturbance, pupil accommodation, palpebral fissure and functional disturbances.

The author acknowledges with gratitude the contribution of three chapters on electroretinography by Drs. Jerry Hart Jacobson, Goodwin Breinin and Otto Lowenstein.

Special Education of Physically Handicapped Children in Western Europe. Wallace W. Taylor and Isabelle Wagner Taylor. International Society for the Welfare of Cripples, New York. 1960. 497 p. $3.50.

During the past ten years there has been a great emphasis, through the United Nations, the International Labour Organization, and the World Health Organization on the social, vocational and medical aspects of rehabilitation services for the physically handicapped. Each of these organizations has specialists in these areas and operates technical assistance programs, including consultant services, fellowships, and provision of equipment and supplies. This coordinated international program for the rehabilitation of the physically handicapped resulted from an early recognition by the United Nations and its specialized agencies of the great importance of rehabilitation.

The teaching profession itself has been slow to promote special education actively in some countries. In many cases this has been due to a lack of understanding of the importance of education for the handicapped, whereas in other cases educational needs in general have been so great that teachers felt they must concentrate their efforts on programs for normal chil-

dren. The World Confederation of Organizations in the Teaching Profession has recognized the need for leadership in this area by establishing a Committee on Education of Handicapped Persons under the chairmanship of Dr. Lee P. Patterson of the School for Crippled Children in Montreal, Canada.

In directing attention to the problems and needs in the field of special education the International Society for the Welfare of Cripples has played an important part. Its Committee on Education of Handicapped Persons sponsored this study in Western Europe jointly with the International Union for Child Welfare, in cooperation with UNESCO.

Dr. Wallace W. Taylor, professor of education, State University of New York, and Dr. Isabelle Wagner Taylor, chairman of the department of psychology, Russell Sage College, volunteered to make the survey while on sabbatical leave, and devoted two years to the research and writing of the report. Part I deals with the survey in general; Part II with detailed information on the special education programs in each of 21 countries.

Definitions of blindness vary to a considerable extent in these countries but a tendency is noted to use more flexible, functional definitions in terms of educability, recognizing other factors such as intelligence, motivation and supplementary characteristics of the visual deficiency rather than as formerly to define blindness in rigid ophthalmological terms. This permits the best placement of the child. Such practice is followed in England, Wales, Ireland and Scotland.

It is difficult to obtain reliable data on the extent of blindness because in most countries reporting is not obligatory and no central register is maintained. There is a tendency to include the blind and the partially seeing in the same institutions and to give figures for these combined groups. In the northern countries, however, an effort is made to differentiate between the two in making assignments to special schools.

The incidence of blindness due to environmental conditions is reported to be decreasing everywhere. The most dramatic drops have occurred in those countries where only recently higher standards of living and improved public health practices have reached the masses of the people. For example, in Portugal there was a decrease of 12.3 per cent in blindness between 1940 and 1950; in Italy there has been a sharp drop in cases of trachoma, though this disease still constitutes a serious problem in the south where re-infection is yet fairly common.

On the other hand, retrolental fibroplasia outbreaks have occurred only in the advanced countries that provided incubators for premature babies (as in England in the period from 1948 to 1952), in contrast to the less developed countries where no such cases have been reported.

Special training and licensing requirements for teachers of the physically handicapped vary so widely in Europe that they cannot easily be summarized; 14 countries have such requirements for teachers of the blind.

This report includes a wealth of information, presented in a concise and readable style. It should prove of interest and value to institutions and individuals concerned with the field of special education.